Longitudinal associations between parental migration and children's psychological well-being in Southeast Asia: The roles of caregivers' mental health and caregiving quality

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Abstract

Objective: This study investigates the longer-term effects of parental migration on the psychological well-being of children who stay behind in two major labor-sending countries in Southeast Asia, namely, Indonesia and the Philippines. Adopting the framework of the 'care triangle', we further examine how caregivers' mental health and caregiving quality moderate the associations between parental migration and children's psychological well- being.

Methods: Using longitudinal data collected in 2008 and 2016/17, we assess children's psychological well-being during early childhood (aged 3–5 years) and again in adolescence (aged 11–13 years). We apply both fixed- effects and random-effects models, using the Hausman test to indicate the preferred model.

Results: The findings indicate that there is no significant longer-term effect of parental migration on children's psychological well-being, but parental migration tends to show adverse effects on Filipino children's psychological well-being when they are cared for by a caregiver with poor mental health.

Conclusions: The two-country comparison demonstrates the complexities of understanding the gender-based in- fluences of parental migration on children's psychological well-being. The findings also highlight the care- giver's role in maintaining frequent communications with migrant parents within the care triangle, which is crucial to children's well-being.

Introduction

Labor migration has been a significant driver of economic growth and development in Southeast Asia, a major source of, and destination for, migrants. By 2020, there were 11.7 million Southeastern international migrants from Southeast Asia, with labor migration being the dominant type of migration (International Organization for Migration [IOM], 2019; United Nations, Department for Economic and Social Affairs [UNDESA], 2020). The migration of millions of adults has an impact on their families, particularly their children. As labor migrants face difficulties securing legal migrant status which could allow family migration, they often move alone or, less commonly, with a spouse (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). As a result, the children of those migrants usually remain in their place of origin. Compared with the expanding literature on children left behind by migrant workers in China or Mexico, there have been relatively few studies on this topic in Southeast Asia (Fong & Shibuya, 2020) and even fewer, if any, longitudinal studies. This study, therefore, focuses on two Southeast Asian countries, Indonesia and the Philippines, to examine the longitudinal associations between parental migration and children's psychological well-being. Of particular interest are the caregiver's mental health and caregiving quality and their possible moderating roles in shaping the psychological well-being of left-behind children.

Parental Migration and Children's Well-being

A growing body of literature has examined the association between parental migration and the well-being outcomes of left-behind children. The economics literature addresses how migration, as a household livelihood strategy, can benefit both migrants and their family members who stay behind in their place of origin (Adams, 2011). Remittances can promote

human capital investments, and children thereby have better educational opportunities, improved nutrition, and a reduced risk of becoming child laborers in the specific context (Mu & de Brauw, 2015; Wassink & Viera et al., 2021; Yang, 2011), but studies in Southeast Asia show inconsistent results depending on complex contextual factors (Graham & Jordan, 2013; Lu, 2015).

Studies drawing on child psychology and family studies tend to focus attention on the trade-offs between economic gains and the emotional costs experienced by children when they grow up in the absence of parent(s) during critical developmental stages. A meta-analysis (Fellmeth et al., 2018) concluded that children left behind by migrant parents, especially by both parents, had a significantly higher risk of poor mental health; this conclusion was drawn largely from studies conducted in China, a country with large-scale internal migration, and thus may not accurately reflect other contexts. A study in Ghana found that parental migration had significant negative impacts on children's well-being, explained partly by the prevalent practice of child fostering in extended family systems (Cebotari et al., 2018). Comparative studies in Southeast Asia suggested context-dependent relationships between parental migration and the well-being of children in origin countries (Authors, 2011; Authors, 2012). For instance, Indonesian and Thai children with migrant fathers were found to be more likely to have poorer psychological well-being compared with children living with both parents, but this pattern was not duplicated in the Philippines and Vietnam. Mazzucato et al.'s (2015) study in multiple African countries found that children were particularly vulnerable to poor psychological health when they were cared for by their father when the mother migrated. Such regional differences may reflect a variation in the material and social resources available for families left behind in communities of origin.

We pay particular attention to the roles of caregiving-related characteristics in explaining when children's psychological well-being would be affected by parental migration. Vanore et al.'s (2021) review on the psychosocial impacts of parental migration on left-behind children emphasized how caregivers' well-being and the quality of care they provide are important determinants of left-behind children's well-being. Parental migration has raised a growing concern about a 'care crisis' and a potential 'care deficit' for children who stay behind (Hoang et al., 2015; Parreñas, 2002). In Southeast Asia, although stay-behind fathers have been found to constitute the most important group in caregiving, children are likely to experience being cared for by different family members when under the care of their fathers (Authors, 2012; Lam & Yeoh, 2019b). The presence of multiple caregivers, however, does not always ensure a strong web of care for children. When both parents have migrated, children may be at the greatest risk of experiencing disruptions in care arrangements, greater exposure to family structure transitions, and low quality of care with less involvement and warmth (Lu et al., 2019; Lu et al., 2021). In addition, previous studies have highlighted the gendered patterns in the influence of parental migration on children's outcomes (for a review, see Antia et al., 2020). Thus, we differentiate between the gender of migrant parent(s). The findings from existing gender-differentiated studies of left-behind children are conflicting. Paternal migration and maternal migration present different challenges to family functioning. For example, father migration may disrupt parent-child intimacy as migrant fathers, compared with migrant mothers, are less involved in long-distance parenting directly (Madianou & Miller, 2011; Parreñas, 2008). Chen et al.'s (2020) meta-analysis highlighted the risk of child victimization and poor psychological adjustment among Chinese children in *mother-migrant families*. In contrast, children with migrant mothers show better psychological well-being in Ghana, where, overall, migrant mothers tend to send

remittances more frequently (Raturi & Cebotari, 2022). Variation in the outcomes may depend on caregiving practices associated with broader contextual factors (e.g., gender norms) and various domains of childcare needs.

The 'Care Triangle' in Migrant Families

In a family environment where one or both parents are migrants, the 'care triangle' emphasizes how care arrangements are negotiated among the migrant parent(s), the stay-behind caregivers, and the children (Graham et al., 2012; Suárez-Orozco et al., 2002). Interactions among these three groups within the care triangle are critical to children's experiences of caregiving through the process of parental migration. Although there is convincing evidence that the mental health of caregivers and the quality of care provided by them are significant predictors of child well-being (Manning & Gregoire, 2009; Rasic et al., 2014), how caregiving is associated with the other two groups within the care triangle in the context of parental migration is less clear.

According to the family stress theory (Conger et al., 2000; Patterson, 1998), migration, as a form of family transition and disruption, can generate chronic stressful experiences for both caregivers and children who stay behind. The migration of family members, especially female migration and migration to the Middle East, has been found to be associated with the adverse mental health outcomes of adults who stay behind (Graham et al., 2015; Knipe et al., 2019; Kumar, 2021). Graham et al.'s (2015) study found that stay-behind caregivers, especially *mother-caregivers,* were vulnerable to poor mental health. The poor psychological status of caregivers could decrease the quality of their caregiving, subsequently influencing the well-being of the children under their care. This hypothesis was supported by Lu et al.'s (2019) study, which

found that left-behind children's vulnerability in terms of psychosocial well-being could be explained by their caregiver's emotional distress and less involved caregiving practices.

Negotiations and resource exchanges within the care triangle inform the caregiving practices of migrant families (Bryceson, 2019; Graham et al., 2012). In Asia, where intergenerational exchanges are commonly practiced, family members left behind may tend to have relatively positive attitudes towards childcare, reflecting exchange expectation and obligation (Cong & Silverstein, 2011; Frankenberg et al., 2002). Such norms may facilitate a willingness among stay-behind family members to accept responsibilities for childcare, which in turn would contribute to stable and supportive caregiving for left-behind children (Fu & Law, 2017; Hoang & Yeoh, 2012). Migrant parents, despite their physical absence, are still actively involved in maintaining the connections of the care triangle. Remittances sent by migrants are linked to the better mental health of left-behind caregivers and reductions in their caregiving distress (Teerawichitchainan & Low, 2021). In contrast, caregivers can experience financial stress and emotional tension if migrants fail to provide sufficient financial support, which in turn decreases their capability to provide supportive care (Marchetti-Mercer, 2012).

Study Settings: Labor Migration in Indonesia and the Philippines

Southeast Asia is an important subregion of labor migrant supply, and labor migration continues to serve as a multigenerational poverty reduction strategy (IOM, 2019). Migrant workers make up over 90% of the total migrant population in the region (United Nations, Economic and Social Commission for Asia and the Pacific [UNESCAP], 2020). Indonesia and the Philippines are two well-established labor-sending countries within the region, and their migrants, especially female international migrants, comprise a significant share of overseas

foreign workers across the world. The comparable data allowed us to examine the country-specific impacts of parental migration as well as reflect the wider context of Southeast Asia.

The Philippines has the largest stock of international migrants (over 6 million) in Southeast Asia, followed by Indonesia, with around 4.6 million in 2020 (UNDESA, 2020). The Philippines exports labor migrants of various skill levels, including domestic workers and highly skilled workers with tertiary degrees (UNESCAP, 2020). More than three quarters of Indonesian labor migrants are low-skilled workers holding occupations such as domestic, agriculture, and construction workers (World Bank, 2017). The rising demand for domestic and care workers has contributed to a rising proportion of female workers within the migrant stock in Southeast Asia, the share of female migrants from Indonesia and the Philippines being 44% and 54%, respectively (IOM, 2021). In addition to international migration, a significant trend of internal migration from rural to urban areas is also present in both countries (UNESCO, 2018).

Remittance flows to Indonesia reached USD 9.7 billion in 2020. The Philippines, a lower-income country compared with Indonesia, relies heavily on remittances; international remittance inflows to the Philippines reached USD 35 billion in 2020, accounting for over 9% of the country's GDP (World Bank, 2022). While remittances do play a significant role in poverty reduction nationally and within families (Pholphirual, 2018), the high number of labor migrants, and specifically the increasing participation of mothers in labor migration, continue to draw attention to how families adjust care arrangements and to the quality of care for left-behind children. In the Philippines, around 27 percent of children have at least one parent working abroad (UNICEF, 2017). Although no accurate statistics are available, it is believed than millions of children in Indonesia are left behind by their migrant parents as most Indonesian labor migrants are reported to move without their families (UNESCO, 2018).

The Present Study: Research Framework and Questions

This study investigates the longitudinal associations between parental migration and children's psychological well-being. As argued, in addition to the lack of region-specific studies, a major research gap in the existing literature is the lack of longitudinal datasets to investigate the longer-term effects of parental migration on the mental health outcomes of children. The longitudinal approach can provide stronger evidence of the impacts of parental migration on child outcomes over time than the current preponderance of cross-sectional studies. The current study, an 8-year cohort study, assessed children's psychological well-being during early childhood (3 to 5 years old) and again in adolescence (11 to 13 years old).

Figure 1 illustrates the analytical model of this study based on the framework of the care triangle (Authors, 2012). We examine how parental migration interacts with caregiving-related factors to affect children's well-being.

Maintaining contact within the care triangle of migrant families is also crucial to the well-being of family members who stay behind. Therefore, we also examine the possible heterogeneity in children's well-being caused by frequency of contact. Daily contact with migrant parent(s) can be crucial in fostering long-distance parent-child intimacy and help children better understand how parental migration, as a household strategy, promotes the family's interests (Dreby, 2007; Lam & Yeoh, 2019a). Children's cognitive development and agency affect their roles in communication with migrant parent(s). Caregivers can have crucial influences on the frequency and efficacy of communication within the care triangle, particularly when young children have limited ability to participate in parent-child communication directly.

With respect to the roles of caregivers, we examine the potential moderating effects of caregiver's mental health and caregiving quality. As discussed, the diverse experiences of care

arrangements and the degree of children's adjustment are linked with the quality of care accessible to children. In addition to caregiver's mental health, we capture the quality of caregiving, conceptualized by caregiving quantity, availability, and stability. Caregiving quantity refers to the number of hours per day that a caregiver spends on care tasks for the sampled child. Caregiving availability depends on the number of children a caregiver is taking care of and on caregivers' access to support to provide quality care. Additionally, caregiving stability has a critical role in influencing caregiving quality. Mazzucato and Cebotari's (2017) study found that having a stable caregiver, rather than the type of caregiver, matters more to left-behind children's psychological well-being.

Taken together, this study aims to investigate the following research questions and hypotheses:

R1: How do parental migration, caregiver's mental health, and caregiving quality interact to influence child psychological well-being?

H1.1: Parental migration is associated with decreased child psychological well-being.

H1.2: Parental migration may impact child psychological well-being more negatively when children are cared for by a caregiver with poor mental health.

H1.3: Parental migration may impact child psychological well-being less negatively when the family maintains caregiving quantity, availability, and stability.

R2: How do the impacts of parental migration vary based on who has migrated and the frequency of communications?

H2.1: Mother-involved migration has stronger negative effects on child psychological well-being than father-only migration.

H2.2: Children who have less frequent contact with migrant parents are more vulnerable to poor psychological well-being than those who have frequent contact.

Methods

Data

This study used survey data from a longitudinal mixed-method project on Child Health and Migrant Parents in South-East Asia (CHAMPSEA). The first wave of data collection was conducted across four countries in the region (Indonesia, the Philippines, Thailand, and Vietnam) from 2008 to 2009. A second wave was completed in Indonesia and the Philippines from 2016 to 2017. CHAMPSEA employed a three-stage sampling strategy drawing on public health surveillance methods (Byass et al., 2002; Wilson et al., 2006). While the resultant samples are not nationally representative, replication is possible following strict protocols (see Authors, 2011, for a detailed discussion). The inclusion criteria for migrant households were as follows: 1) having a child in one of the two age groups of interest (aged 3 to 5 or aged 9 to 11 at time of first interview in 2008); 2) one or both parents working overseas for a continuous period of at least 6 months prior to interview. Children from families whose parents were not migrants in the previous 6 months and lived in the same communities were included as the comparison group. Households with a recent history of internal migration (in past 6 months) only were excluded. The 6-month period was chosen to provide findings comparable with previous studies in the field (e.g., Save the Children, 2006) and because it was considered a sufficient length of time to capture the non-transient effects of parental migration. Only one (index) child in each qualifying household was selected, with random selection employed if more than one child qualified, and all of the children's parents were heterosexual married couples at the time of recruitment in 2008.

The analytic sample draws on the young child cohort, aged 3 to 5 years in 2008 and approximately 11 to 14 in 2016/17. The first wave was conducted in two provinces/regions in each country. In Indonesia, we interviewed 522 households at the baseline and re-interviewed 481 households, and in the Philippines, we interviewed 501 households and followed up with 368 households, resulting in overall attrition rates of 8% and 27%, respectively, which are comparable or better than those of other studies in the region (Adair et al., 2011). After deleting cases with missing values for key variables, such as migrant status (we excluded one case with missing values of parental migrant status as both parents had passed away), and outcome variables (n = 9), the analytic sample was 840 households (475 in Indonesia and 365 in the Philippines) with 1680 observations.

The survey included three sets of questionnaires: 1) the household questionnaire capturing household characteristics, dynamics of family relationships, and migrant status of family members; 2) the caregiver questionnaire capturing caregiving characteristics and various aspects of the child's development; and 3) the child questionnaire capturing their well-being, education, behaviors, and perceptions about parental migration. Face-to-face interviews were conducted with the responsible adult in each household who could best answer questions about the family's background, the sampled child, and the child's caregiver.

Measures

Parental migration status. The household survey included questions about the current migrant status of parents, a module on migration history for the father and the mother, and information about nonresidential family members. On the basis of the answers, household migrant status was classified as nonmigrant or migrant depending on whether one parent or both parents were migrant workers for the majority of time in the 6 months preceding the interview

date, with nonmigrant households as the comparison group. We further differentiated the households with migrants into two types: father-only migration and mother-involved migration, the latter referring to conditions where either the mother migrated alone or migrated with the father. We classified mother-migration and both parents migration as one group because the percentage of both parents migration in the sample was less than 6% at both waves in both countries. Also, on the basis of the frequency of contact with migrant parent(s), households were also categorized into those having frequent contact with migrant family members, namely having daily contact in the past 6 months, and those having no frequent contact.

Children's psychological well-being. Child psychological well-being, the key dependent variable, was measured using the Strengths and Difficulties Questionnaire (SDQ) according to the caregivers' reports (we used age-specific versions of the SDQ according to children's age at the time of interview). The SDQ is a widely used screening questionnaire that assesses the behavioral and emotional well-being of children aged 3 to 18 years (Goodman, 2001). It has five dimensions, including internalizing and externalizing subscales as well as prosocial behaviors. Respondents rated 25 items from 0 (not true) to 2 (certainly true). We used the total difficulties score, which ranges from 0 to 40 and is calculated by summing the 20 items relating to difficulties with hyperactivity, emotional symptoms, conduct problems, and peer problems. A higher total difficulties score indicates a child's lower level of psychological well-being. The subscale of total difficulties showed an acceptable reliability, with the Cronbach's α being 0.61 and 0.71, respectively, for the Indonesian and Filipino samples.

Caregiver mental health. The mental health of the caregiver was measured using the 20-item Self-reporting Questionnaire (SRQ-20). SRQ-20 is a validated instrument to screen common mental disorders, especially in low- and middle-income countries (LMICs; World

Health Organization, 1994). Respondents answered yes/no questions related to certain pains and symptoms that may have bothered them in the last 30 days. The total SRQ score can be recoded as a binary variable, with a commonly used cut-off point of 7 or 8, to detect cases with common mental disorders (De Silva et al., 2007). The optimal cut-off point varies depending on the setting (rural or urban) and culture (Harpham et al., 2003); therefore, we used the continuous scores of the SRQ to make the results comparative across the two countries.

Caregiving quality. Caregiving quality was operationalized as quantity, availability, and stability. Caregiving quantity referred to the hours the caregiver spent on childcare per day. The level of parental/caregiver involvement in care tasks is likely to vary by child developmental stage, and the amount of time often declines as children grow up (Harvard Family Research Project, 2007; Hurley et al, 2017). Variations in hours of care have been found in the literature (ranging from 20 to 30 hours per week; National Institute of Child Health and Human Development Early Child Care Research Network, 2003), and childcare deficiency is particularly worse in LMICs (Ruiz-Casares & Nazif-Munoz, 2018). Here, we used the age-specific *Z*-score of care hours instead of raw hours. The availability of caregiving, such as the caregiver-child ratio, is essential to child well-being (Vandell & Wolfe, 2000). In this study, to capture the availability of caregiving in left-behind families, a dummy variable was created on the basis of answers to the question on whether the caregiver was taking care of more than one child in addition to the index child. Additionally, support from other family members can strengthen the capacity of the primary caregiver to care for the children. Solo caregivers are more likely to experience caregiver burden (Unson et al., 2016). We therefore used a dummy variable that denoted whether the caregiver had regular support to provide care. The stability of caregiving was assessed by whether there was a change of primary caregiver between the two waves as

prior studies have suggested that more changes of caregivers, especially within families experiencing care disruption, may lead to negative outcomes regarding children's behavior and social development (Bratsch et al., 2020; Pilarz & Hill, 2014)

Demographic covariables. The demographic covariables included were age of children and caregivers, child gender, household income, and assets. Household income was the monthly amount of all income-generating activities, including remittances sent from migrant parents. Productive and nonproductive assets were measured by the Asset Index, reflecting a household's long-term economic status, with a higher score indicating greater economic status (World Food Programme, 2017). The analysis also controlled for whether the index child had a younger sibling and the change in the marital status of their parents between the two waves (0 = married; 1 = divorced or separated; cases (n =35) whose father or mother had passed away were also recoded as 1).

Analytic Strategy

To estimate changes in children's psychological well-being over time, we mainly adopted a fixed-effects modeling strategy, using within-child variations in the migrant status of parents across the two time points as a predictor. The migration decision of parents is not random; rather, it depends on various unobserved factors, such as parenting ability and the income motivation of parents (Nguyen, 2016). Compared with the ordinary-least-squared models, the fixed-effects model allows for minimizing potential biases caused by unobserved characteristics which are considered time-invariant (Garret et al., 2009). We specified the association between parental migration and children's psychological well-being, as formulated below:

$$Y_{it} = \alpha_0 + \alpha_1 PM_{it} + \alpha_2 CHILD_{it} + \alpha_3 HH_{it} + \alpha_4 CARE_{it} + \alpha_i + \varepsilon_{it,}$$

where α_0 is the intercept; Y_{it} is a continuous measure of the psychological well-being of children *I* at the time *t*; and PM_{it} is a dummy variable measuring parental migrant status. When at least one parent has migrated at time *t*, PM_{it} takes the value of one; otherwise, it takes the value of zero. $CHILD_{it}$ represents a vector of the age of the child HH_{it} and $CARE_{it}$ represents a set of time-varying household and caregiving characteristics that may affect children's psychological well-being. The vector α_i accounts for unobserved time-invariant factors that may affect both parental migration and children's psychological well-being. Additionally, we included interactions between parental migration and covariables, such as child age and caregiver's mental health, to investigate how the effect of parental migration varies across different conditions. For parsimony, only significant interactions are displayed in the final models.

We further investigated whether who the migrant parent was would make a difference to children's psychological well-being. As argued, it is possible that children are more vulnerable to poor psychological well-being when the mother is involved in the migration rather than when only the father is a migrant. To test this hypothesis, we estimated the equation below:

$$Y_{it} = \alpha_0 + \alpha_1 FatherM_{it} + \alpha_2 MotherM_{it} + \alpha_3 CHILD_{it} + \alpha_4 HH_{it} + \alpha_5 CARE_{it} + \alpha_i + \varepsilon_{it},$$

where $FatherM_{it}$ is an indicator of the presence of a migrant father and $MotherM_{it}$ indicates having a migrant mother or/and a migrant father.

We also considered the frequency of contact between migrants and their families. We examined the effects of contact frequency on children's psychological well-being as follows:

$$Y_{it} = \alpha_0 + \alpha_1 Frequent_{it} + \alpha_2 NofrequentM_{it} + \alpha_3 CHILD_{it} + \alpha_4 HH_{it} + \alpha_5 CARE_{it} + \alpha_i + \varepsilon_{it},$$

where $Frequent_{it}$ and $Nofrequent_{it}$ respectively represent having or not having daily contact with migrant parent(s). We adjusted the standard errors for clustering of observations across the time periods at the individual level in all models.

In the fixed-effects models, unobserved variables may be correlated with the migration decision. For example, parents may be less likely to migrate if their children are in poor health or if they lack caregiving resources in the family, and thus fixed-effects models may underestimate the effects of parental migration on children's well-being. To address this issue, random-effects models, which assume that any omitted variables are distributed randomly, were also conducted. We used the Hausman test (1978) to compare the fixed-effects models with the random-effects models. For the fixed-effects models, the covariables included were age of children and caregivers, which changed over time. For the random-effects models, we controlled for children's gender and other time-varying factors at the household level (e.g., household income).

Results

Descriptive Results

Figure 2 represents the percentage of children having migrant parent(s) and parental care. In the Indonesia sample, over half of the children had one or two migrant parents in 2008. Similarly, 51% of the sampled Filipino children were left behind by one or both migrant parents in 2008. Over time, the percentage of children with migrant parent(s) decreased to 28% in Indonesia, compared to 42% in the Philippines. The prevalence of mother-involved migration among the Indonesian sampled households decreased from 33% to 16%, while such prevalence among the Filipino households increased slightly from 10% to 13%. When comparing migrant status across waves, the proportion of children who experienced parental migration in both waves was 19% in Indonesia and 31% in the Philippines. At Wave 2, the percentage of children

of returned migrant(s) was 29% in Indonesia and 17% in the Philippines. For the majority of the households with migrant fathers, the mothers remained as the primary caregivers at the two waves in both countries. When mothers migrated alone or with the fathers, half of children were cared for by grandparents/other relatives in Indonesia at the baseline, and this percentage decreased to 38% at Wave 2; around two thirds of the Filipino children were under kinship care (71% at Wave 1; 78% at Wave 2).

Table 1 presents the descriptive statistics for the key variables used in the analysis. For both countries, the average age and gender ratio of the sampled children were similar (likely reflecting the sampling approach). Both countries showed an increase in family dissolutions, with one quarter of parents reported as having separated or divorced by Wave 2. It was a common practice for caregivers in families to take care of more than one child in addition to the index child. With respect to caregiving quantity, the average number of hours that a caregiver spent caring was 13 hours per day for the Indonesian sample and 11 hours per day for the Filipino sample at Wave 1. The average number of care hours decreased over time when the index children entered early adolescence. The Indonesian caregivers were more likely to have regular support to provide care than the caregivers in the Philippines.

Regression Models

We report the regression models for the two countries according to the results of the Hausman test. The Hausman test indicated that the random-effects models were preferred over the fixed-effects models for the Indonesian sample, whereas the opposite was found for the Filipino sample. First, we estimated the net effects of having migrant parent(s) on children's psychological well-being. Having migrant parent(s) was significantly associated with poorer psychological well-being of children (Indonesia: B = 1.44, $p < .001$; The Philippines: B = 1.71, p

= 0.033). Still, the effect of parental migration became statistically insignificant when other caregiving-related and demographic variables were introduced (H1.1 was not supported).

We further included the interaction terms of the migration variables and caregiver mental health in the models as the caregiver's mental health exhibited detrimental effects on children's psychological well-being as expected. As shown in Table 2, the main effect of parental migration was not significant in both countries. Nonetheless, the Filipino children left behind by migrant parents and cared for by a caregiver with poor mental health were more likely to have poorer psychological well-being than those with nonmigrant parents (B = 0.32, p = 0.055, supporting H1.2).

Table 3 presents the models predicting how the type of parental migration influences children's psychological well-being. Although the net effects of *father migration* on children's poorer psychological well-being were significant in both countries (Indonesia: B = 2.03, $p < .001$; the Philippines: B = 1.99, p = 0.018), these effects were insignificant after controlling for other covariables. *Father migration* (H2.1 was not supported) in Indonesia and *mother-involved migration* (supporting H2.1) in the Philippines were associated with the decreased psychological well-being of left-behind children only when children were cared for by a caregiver with poor mental health. The discrepant patterns of parental migration's effects on child psychological well-being in the two countries provide further support for contextually informed analysis.

To better understand the heterogeneity of migrant families and care triangle dynamics, we examined the effects of contact frequency with migrant parent(s) on children's psychological well-being (Table 4). In Indonesia, for children with migrant parents, contact frequency did not have a significant effect on total difficulties scores (H2.2 was not supported). In the Philippines,

a lack of frequent contact with migrant parent(s) increased the risk of poor psychological well-being among children cared for by caregivers with poor mental health (supporting H2.2).

Among the variables measuring caregiving quality, only caring for more than one child was negatively associated with the psychological well-being of the Filipino children. We included the interaction terms of parental migration with this indicator for whether the caregiver took care of more than one child. The results showed that the interactions were insignificant (H1.3 was not supported).

Effects of Individual and Household Characteristics

We interpret the roles of other individual and household covariables on the basis of the results in Table 2. In both countries, children's younger age was associated with their poorer psychological well-being, but the effect was lessened as the children grew older. The results of random-effects models for the Indonesian sample indicated that the girls tended to have poorer psychological well-being compared to the boys. In Indonesia, caregiver's age was negatively associated with the total difficulties scores of children, but this was not found in the Philippines. In terms of household characteristics, having a younger sibling was associated with the poorer psychological well-being of the Indonesian children. Household assets, surprisingly, was negatively associated with Filipino children's psychological well-being.

Robustness Checks

We carried out a series of sensitivity analyses to check the robustness of the results and the potential bias associated with the panel attrition. First, we estimated the regression only including children whose caregivers remained the same across the two waves to address the concern that changes in caregiving arrangement may be endogenous to children's psychological well-being (see the results in Table A1- Panel 1 in the Appendix). The coefficients and

significance levels are similar to the above results. Second, we estimated the regressions including individual-level variables only to examine the possibility that the results were driven by changes in household characteristics. The results suggested that removing household characteristics might lead to biased estimates of migration, so we included household characteristics in the final models. Third, we estimated the regression after deleting households with return migrant parents at Wave 2 of the survey (n = 132 in Indonesia; n = 58 in the Philippines) to rule out the possibility that the total difficulties scores of children with current nonmigrant parents were not overestimated. The results were consistent with the estimation results using the full sample.

To assess the possibility of panel attrition, we examined any significant difference in migrant status, outcome variables, and other household covariates measured at Wave 1 by respondents and those lost at Wave 2. Parental migration and other household characteristics were not significantly correlated with the sample attrition in both countries, except for that the Filipino sample that dropped out were more likely to have lower scores total difficulties scores at Wave 1 ($F(1, 503) = 6.46$, $p < .05$). The estimates of the average scores of total difficulties in the Filipino sample may be biased upward.

Discussion

This pioneering study makes new contributions to the literature by examining the longer-term association between parental migration and children's well-being in two major labor-sending countries in Southeast Asia. This study expands a small but growing body of literature using longitudinal data to understand effects of parental migration on child development across diverse settings. Most existing longitudinal studies focus on children's physical growth (e.g., Nguyen, 2016), and efforts to examine psychological outcomes remain rare. Among the limited

studies, Cebotari et al.'s (2018) study in Ghana found that parental migration did not have significant long-term influences on children's psychological well-being, although prior cross-sectional data suggested that Ghanaian children from migrant households fared worse than their counterparts from nonmigrant households (Mazzucato et al., 2015). Longitudinal evidence from China suggested that the internal migration of parents increased left-behind children's vulnerability to depression over time (Lei et al., 2021; Zhou et al., 2018). The discrepancies underscore the importance of examining context-specific relationships. To the best of our knowledge, this study is the first attempt to examine the longer-term associations between parental migration and children's psychological well-being in Southeast Asia. One general finding is that there is no significant longer-term direct effect of parental migration on children's psychological well-being in both study settings (H1.1 was not supported). This finding echoes evidence from Ghana, which also has large-scale international labor migration, but contrasts with findings from research in China, where labor migration is largely domestic. Cebotari and Dito (2021) found that the internal migration of parents, but not international migration, was negatively associated with Ghanaian children's living conditions. Our findings further highlight the importance of differentiating forms of migration both within (e.g., domestic/internal) and between (e.g., international/cross-border) the national contexts where migration happens.

This study provides a comparative analysis of gendered patterns in the influence of parental migration on child psychological well-being. Our findings indicate that Indonesian children of migrant fathers left behind in the care of a caregiver with poor mental health are at risk of poor mental health themselves (H2.1 was not supported). This result is consistent with cross-sectional evidence suggesting that the migration of fathers, which may not change the child caregiving arrangements, can still generate adverse influences on children's psychological health

(Fu & Chen, 2021; Graham & Jordan, 2011). By contrast, we found that Filipino children with migrant mothers are vulnerable to poor psychological well-being when they are cared for by caregivers with poor mental health (supporting H2.1). One possible explanation is that compared with Filipino fathers, Indonesian fathers in mother-migrant families are more actively involved in childcare (Lam & Yeoh, 2018), and paternal involvement contributes to child well-being. Also, Indonesian fathers remaining behind often benefit from the strong support of their extended family in actual caregiving practices (Hugo, 2002). Additionally, we found that Filipino migrant mothers are less likely to practice 'engaged parenting', defined as having both frequent communication *and* providing frequent remittances, than Filipino migrant fathers (Authors, 2018), which could be explained by structural barriers that may reduce migrant mothers' opportunities of contacting the family left behind (Eremenko & Gonzalez, 2018). It might also be explained by the relationship between migrant mothers and the caregivers of children as maternal migration is sometimes referred to as 'Filipino divorce' (Timmerman et al., 2015), and the distant marital relationship may reduce Filipino mothers' chance of being involved in parenting (Authors, 2018). The two-country comparison demonstrates the complexities of understanding the influences of parental migration in different contexts. Although regional proximity contributes to the similarity between the two countries, the differences in the comparison reflect contextual factors, such as a higher prevalence of female migrants and international migrants from the Philippines than from Indonesia (IOM, 2021).

Supporting H2.2 partially, our findings suggest the adverse effects of less frequent contact with migrant parents on children's psychological well-being in the Philippines, but only when the children are cared for by a caregiver with poor mental health. Previous studies found that frequent contact between migrant parents and children could promote the well-being of both

migrant parents and left-behind children (Graham et al., 2012; Mazzucato et al., 2017; Niu et al., 2020). Our results highlight the important role of caregivers in maintaining children's contact with migrant parents, bolstering support for the care triangle theory. Despite advances in technologies that improve migrants' accessibility to multiple communication platforms, the quality of communication depends on many other factors. Communication between migrants and left-behind families shows asymmetries, as left-behind children may lack agency to decide when to call their parents and have limited access to a mobile phone (Madianou & Miller, 2011). Under such circumstances, it is the caregivers, especially those caring for younger children, who perform the function of arranging communication. Migrant parents from Southeast Asia utilize smartphones to reconstitute parenting roles and perform family practices, but there is a gap in technological competency between migrants and their families in the place of origin, especially for grandparent-caregivers lacking digital skills (Waruwu, 2021). Also, caregivers experiencing poor mental health may lack the capability to facilitate effective communication between migrant parents and left-behind children. Therefore, in addition to community mental health support, other programs could be developed for left-behind families to set up a regular communication schedule and help them to improve the use of advanced communication technologies to maintain family closeness over distance.

As we expected (H1.2), the mental health status of the caregiver stands out as one significant moderating factor, in accordance with the existing literature that demonstrates how the mental health of parents/caregivers increases the risk of their offspring experiencing poor psychological health over time (Murray et al., 2011; Weissman et al., 2016). Family members in migrant-sending areas, especially those who take on childcare responsibilities, may be exposed to increased psychological distress, heightened caregiving intensity, and reduced social support

(Lu, 2012; Teerawichitchainan & Low, 2021; Thapa et al., 2018), but their health has not attracted adequate attention. Hypothesis 1.3 was not supported as there was no interaction effect between parental migration and caregiving quality. An increased caregiving burden in the Philippines was associated with decreased child psychological well-being. According to UNDESA (2017), Filipino households have a higher average number of children aged under 15 compared with Indonesian households. Notwithstanding, the coverage of childcare services remains limited in the Philippines, while Indonesia has experienced a rapid expansion of pre-primary education and services (ILO, 2019; Rao & Sun, 2015). Inadequate provision of childcare and education services may make it more difficult for left-behind caregivers to receive non-family-based support, which consequently threatens children's well-being. Future research can consider wider community and social characteristics, such as access to social welfare and care-related facilities, as they may influence caregivers' and children's well-being.

We found that household assets were negatively associated with Filipino children's psychological well-being. The existing studies generally support the positive effects of household asset accumulation on children's well-being in the aspects of physical health, schooling outcomes, and emotional well-being (Chowa et al., 2010; Shanks et al., 2010). The result suggests that asset building driven by migration may not necessarily promote children's psychological well-being. Similarly, Chea and Wongboonsin's (2020) study found that remittances from migrant parents were negatively associated with spending on child education among poor Cambodian households. Remittances may fail to increase investment in children if households are still struggling to meet basic needs. Additionally, it is possible that among families who use remittances to build/renovate housing, this may increase the time left-behind children spend on household chores, which could influence their mental health. It is important to

acknowledge that the results for the two counties should be interpreted depending on two different modeling strategies, as indicated by the Hausman test. Fixed-effects models were not supported by the Indonesian data and thus random-effects model were applied, while fixed-effect models were more suitable for the Filipino data. The underlying assumption of the random-effects models is that observed predictors in the models are not correlated with the omitted variables, while the fixed-effect models allow them to be correlated (Vaisey & Miles, 2017). The coefficient estimates of the random-effects models represent the weighted averages of the within-child and between-child effects, while the fixed-effects models show within-child variance only (Bell et al., 2019).

Limitations

These results should be interpreted with other limitations in mind. Despite efforts to account for some sources of potential bias, we cannot completely rule out all potential biases, especially those relevant to the selectivity factors of migration. Migration or return does not happen randomly. Individuals who decide to migrate likely have different household characteristics to nonmigrants, and this difference may confound the effect of migration on health outcomes (Schenker et al., 2014). For example, migrant parents may negatively select to return due to the worsening health condition of their families in their place of origin. Estimations may be influenced by a lack of information regarding household characteristics that influence children's well-being before parents' migration.

The estimates of this study represent the average effects of migration on left-behind children, but studies examining the economic impacts of migration suggest duration-dependent heterogeneity in these impacts (Gibson et al., 2013). More attention should be paid to the continuity and transition of migration to allow for examining the resilience or vulnerability

trajectories of left-behind children. Further studies can consider applying sequence analysis to capture migration trajectories or use a life-history perspective to collect retrospective panel data to examine the cumulative effects of parental migration.

The measures of child well-being in this study were based on reports from their primary caregivers, given the young age of the sampled children at Wave 1 (3 to 5 years old). It is plausible that the mental health status of the caregivers would influence how they reported child well-being (Goodman & Tully, 2006; Wickramage et al., 2015). Regardless, the SDQ scores reported by caregivers often show internal consistency with those based on child self-report (Emerson, 2005).

Additionally, while this study captures aspects of caregiving quality for children, the data lacked adequate information on the efficacy of parenting, such as parental/caregiver attachment, involvement, and parenting style. To better provide tailored interventions, future work should consider more in-depth examination of family relationships and processes as well as contextual studies to identify community resources to better promote left-behind children's welfare in the family environment.

Conclusions

Despite these limitations, this study contributes to the current knowledge related to understanding the longer-term impacts of parental migration on children's well-being within a comparative perspective. The study advances our understanding of the care triangle as a key explanatory framework. The findings highlight potential service/policy directions to promote left-behind children's psychological well-being by providing preventive interventions to promote the mental well-being and communication capacities of their caregivers. Effective interventions require identifying left-behind families who are at high risk and making resources available at

the community level to meet caregivers' health needs and support their childcare responsibilities, especially in LMICs of the global south.

Credit author statement

Yao Fu: Conceptualization; Methodology; Formal analysis; Writing – original draft; Lucy P. Jordan: Conceptualization; Pro- ject administration; Funding acquisition; Writing (Editing & re- vision); Xiaochen Zhou: Methodology; Conceptualization; Su- pervision; Writing (Editing & revision); Cheng Chow: Data cura- tion; Writing (Editing & revision); Lue Fang: Software; Writing (Editing & revision)

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Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https:// doi.org/10.1016/j.socscimed.2023.115701.

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Table 1

Descriptive statistics for the outcome variables and covariates used in the regression models.

	Indonesia		The Philippines	
	Wave 1	Wave 2	Wave 1	Wave 2
	Mean (*SD*) or Percentage (%)			
Child age	4.07 (0.81)	12.78 (0.87)	4.1 (0.81)	12.78 (0.86)
Child age range	3–5	11–14	3–5	11–14
Child gender (% of female)	49.90	50.55	50.93	53.43
Caregiver age	36.03 (10.82)	42.36 (8.65)	34.94 (10.13)	42.82 (10.4)
Child well-being - the SDQ's total difficulties core	14.36 (5.77)	9.13 (4.96)	14.5 (5.14)	9.91 (4.35)
Caregiver mental health – the SRQ scores	5.36 (4.71)	3.59 (3.55)	3.76 (3.2)	3.69 (3.01)
Hours spent on caregiving - Z scores	0.16 (1.04)	-0.14 (0.77)	-0.16 (0.92)	0.18 (1.2)
Caregiver cares for more than one child	46.09	58.64	65.22	62.46
Caregiver has regular support to provide care	89.38	52.08	95.03	46.99
Caregiver stability (% of change of a caregiver)	-	36.98	-	24.86
Household income in USD (logged)	4.52 (1.0)	5.26 (0.94)	5.48 (0.87)	5.59 (0.92)
Household assets (logged)	-0.61 (0.54)	-0.48 (0.44)	-0.94(0.76)	-0.82 (0.67)
Having younger sibling(s)	14.23	46.61	38.92	54.29
Marital change of parents (% of separated or divorced)	-	14.44	-	14.86

Note. SDQ = the Strengths & Difficulties Questionnaire. SRQ = Self-reporting Questionnaire. SD = Standard deviation.

Table 2

Effects of parental migration on children's well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Having migrant parent(s)	-0.18	0.49	-1.04	0.91
Caregiver mental health	0.46***	0.06	0.29*	0.11
Caregiving quality				
Hours spent on caregiving	0.26	0.18	-0.17	0.21
Caregiver cares for more than one child	-0.62	0.39	1.14*	0.60
Caregiver has regular support to provide care	-0.03	0.49	-0.56	0.61
Caregiving stability (ref.: the same caregiver)	-0.09	0.40	0.53	0.75
Individual and household characteristics				
Child age (years)	-1.92***	0.36	-2.19**	0.38
Child age squared	0.08***	0.02	0.09***	0.02
Child gender (ref: male)	-0.95**	0.33		
Caregiver age	-0.04*	0.02	0.03	0.03
Household income (logged)	0.08	0.16	-0.12	0.29
Household assets	0.15	0.36	0.90*	0.39
Marital status of parents (ref: married)	0.79	0.58	-0.97	0.96
Having younger sibling(s)	0.98*	0.47	-0.62	0.86
Interaction terms				
Parental migration×Caregiver mental health	0.06	0.08	0.32†	0.16
Constant	21.21***	1.71	21.86**	2.59
Observations	909		789	
Overall R^2	0.36		0.27	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p <0 .001$

Table 3

Effects of father/mother migration on children's well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Father-only migration	-0.64	0.62	-1.02	0.96
-Mother-involved migration	0.04	0.60	-0.74	1.32
Caregiver mental health	0.46***	0.06	0.29**	0.11
Caregiving quality				
Hours spent on caregiving	0.22	0.18	-0.20	0.21
Caregiver cares for more than one child	-0.60	0.39	1.15†	0.59
Caregiver has regular support to provide care	-0.11	0.40	-0.53	0.62
Caregiving stability (ref.: the same caregiver)	-0.03	0.50	0.22	0.80
Individual and household characteristics				
Child age (years)	-1.95***	0.36	-2.16**	0.38
Child age squared	0.08***	0.02	0.09***	0.02
Child gender (ref: male)	-0.99**	0.33		
Caregiver age	0.46***	0.06	0.03	0.03
Household income (logged)	0.08	0.16	-0.10	0.29
Household assets	0.13	0.36	0.88*	0.39
Marital status of parents (ref.: married)	0.80	0.58	-0.81	0.98
Having younger sibling(s)	0.95*	0.47	-0.70	0.86
Interaction terms				
-Father-only migration× Caregiver mental health	0.24*	0.11	0.24	0.18
-Mother-involved migration× Caregiver mental health	-0.04	0.09	0.54**	0.21
Constant	21.06***	1.75	21.08***	2.19
Observations	909		789	
Overall $\boldsymbol{R^2}$	0.36		0.26	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***p <0 .001

Table 4

Effects of frequent contact on children's psychological well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Frequent contact with migrant parent(s)	-0.16	0.59	-0.76	1.11
-No frequent contact with migrant parent(s)	-0.32	0.64	-1.16	0.97
Caregiver mental health	0.46***	0.06	0.29**	0.11
Caregiving quality				
Hours spent on caregiving	0.27	0.18	-0.19	0.21
Caregiver cares for more than one child	-0.64	0.39	1.14†	0.59
Caregiver has regular support to provide care	-0.12	0.40	-0.60	0.61
Caregiving stability (ref.: the same caregiver)	0.04	0.49	0.50	0.76
Individual and household characteristics				
Child age (years)	-1.96**	0.36	-2.18**	0.38
Child age squared	0.09***	0.02	0.09***	0.02
Child gender (ref: male)	-0.98**	0.33		
Caregiver age	-0.05*	0.02	0.03	0.03
Household income (logged)	0.12	0.16	-0.13	0.28
Household assets	0.13	0.36	0.93*	0.39
Marital status of parents (ref: married)	0.80	0.59	-0.93	0.96
Having younger sibling(s)	1.00*	0.48	-0.65	0.86
Interactions				
-Frequent contact with migrant parent(s) ×Caregiver mental health	0.10	0.09	0.19	0.20
-No frequent contact with migrant parent(s)×Caregiver mental health	0.03	0.13	0.39*	0.18
Constant	21.15**	1.75	21.08**	2.19
Observations	900		789	
Overall R^2	0.36		0.27	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***p <0 .001

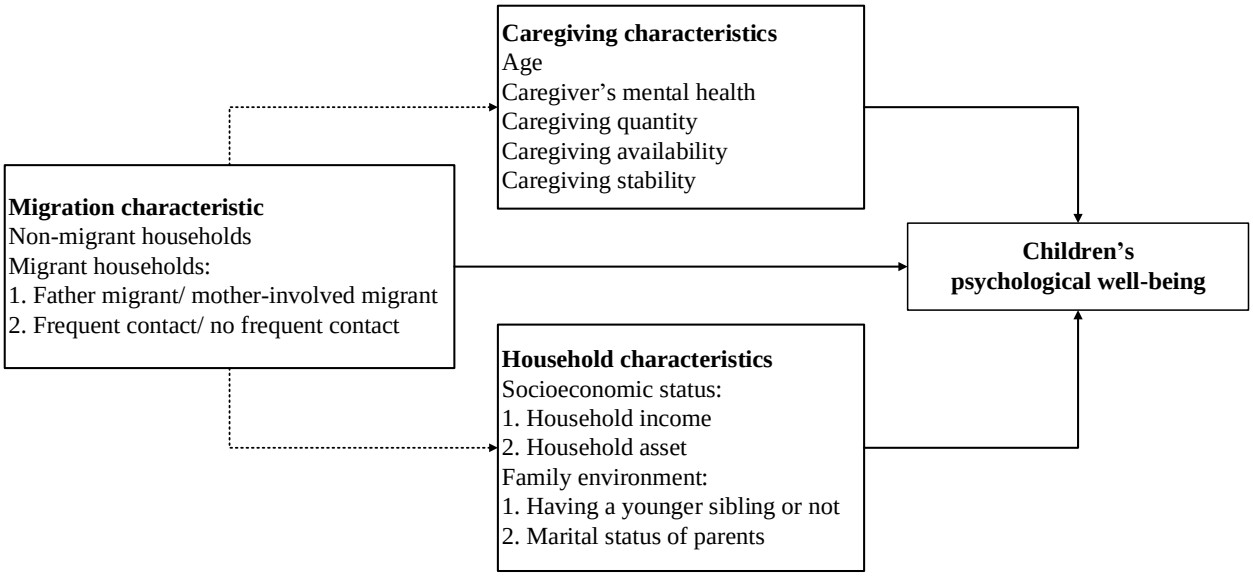

Fig. 1. An analytical model of parental migration and children's psychological well-being with moderators

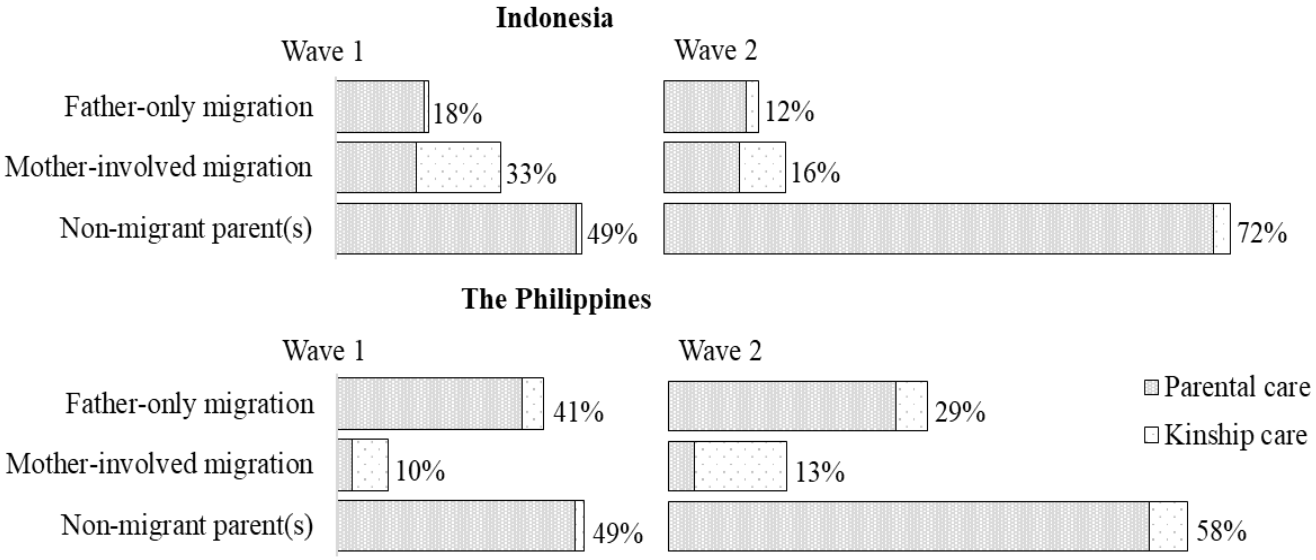

Fig. 2. The percentage of children having migrant parent(s) and caregiver types at 2 waves

Longitudinal associations between parental migration and children's psychological well-being in Southeast Asia: The roles of caregivers' mental health and caregiving quality

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Abstract

Objective: This study investigates the longer-term effects of parental migration on the psychological well-being of children who stay behind in two major labor-sending countries in Southeast Asia, namely, Indonesia and the Philippines. Adopting the framework of the 'care triangle', we further examine how caregivers' mental health and caregiving quality moderate the associations between parental migration and children's psychological well- being.

Methods: Using longitudinal data collected in 2008 and 2016/17, we assess children's psychological well-being during early childhood (aged 3–5 years) and again in adolescence (aged 11–13 years). We apply both fixed- effects and random-effects models, using the Hausman test to indicate the preferred model.

Results: The findings indicate that there is no significant longer-term effect of parental migration on children's psychological well-being, but parental migration tends to show adverse effects on Filipino children's psychological well-being when they are cared for by a caregiver with poor mental health.

Conclusions: The two-country comparison demonstrates the complexities of understanding the gender-based in- fluences of parental migration on children's psychological well-being. The findings also highlight the care- giver's role in maintaining frequent communications with migrant parents within the care triangle, which is crucial to children's well-being.

Introduction

Labor migration has been a significant driver of economic growth and development in Southeast Asia, a major source of, and destination for, migrants. By 2020, there were 11.7 million Southeastern international migrants from Southeast Asia, with labor migration being the dominant type of migration (International Organization for Migration [IOM], 2019; United Nations, Department for Economic and Social Affairs [UNDESA], 2020). The migration of millions of adults has an impact on their families, particularly their children. As labor migrants face difficulties securing legal migrant status which could allow family migration, they often move alone or, less commonly, with a spouse (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). As a result, the children of those migrants usually remain in their place of origin. Compared with the expanding literature on children left behind by migrant workers in China or Mexico, there have been relatively few studies on this topic in Southeast Asia (Fong & Shibuya, 2020) and even fewer, if any, longitudinal studies. This study, therefore, focuses on two Southeast Asian countries, Indonesia and the Philippines, to examine the longitudinal associations between parental migration and children's psychological well-being. Of particular interest are the caregiver's mental health and caregiving quality and their possible moderating roles in shaping the psychological well-being of left-behind children.

Parental Migration and Children's Well-being

A growing body of literature has examined the association between parental migration and the well-being outcomes of left-behind children. The economics literature addresses how migration, as a household livelihood strategy, can benefit both migrants and their family members who stay behind in their place of origin (Adams, 2011). Remittances can promote

human capital investments, and children thereby have better educational opportunities, improved nutrition, and a reduced risk of becoming child laborers in the specific context (Mu & de Brauw, 2015; Wassink & Viera et al., 2021; Yang, 2011), but studies in Southeast Asia show inconsistent results depending on complex contextual factors (Graham & Jordan, 2013; Lu, 2015).

Studies drawing on child psychology and family studies tend to focus attention on the trade-offs between economic gains and the emotional costs experienced by children when they grow up in the absence of parent(s) during critical developmental stages. A meta-analysis (Fellmeth et al., 2018) concluded that children left behind by migrant parents, especially by both parents, had a significantly higher risk of poor mental health; this conclusion was drawn largely from studies conducted in China, a country with large-scale internal migration, and thus may not accurately reflect other contexts. A study in Ghana found that parental migration had significant negative impacts on children's well-being, explained partly by the prevalent practice of child fostering in extended family systems (Cebotari et al., 2018). Comparative studies in Southeast Asia suggested context-dependent relationships between parental migration and the well-being of children in origin countries (Authors, 2011; Authors, 2012). For instance, Indonesian and Thai children with migrant fathers were found to be more likely to have poorer psychological well-being compared with children living with both parents, but this pattern was not duplicated in the Philippines and Vietnam. Mazzucato et al.'s (2015) study in multiple African countries found that children were particularly vulnerable to poor psychological health when they were cared for by their father when the mother migrated. Such regional differences may reflect a variation in the material and social resources available for families left behind in communities of origin.

We pay particular attention to the roles of caregiving-related characteristics in explaining when children's psychological well-being would be affected by parental migration. Vanore et al.'s (2021) review on the psychosocial impacts of parental migration on left-behind children emphasized how caregivers' well-being and the quality of care they provide are important determinants of left-behind children's well-being. Parental migration has raised a growing concern about a 'care crisis' and a potential 'care deficit' for children who stay behind (Hoang et al., 2015; Parreñas, 2002). In Southeast Asia, although stay-behind fathers have been found to constitute the most important group in caregiving, children are likely to experience being cared for by different family members when under the care of their fathers (Authors, 2012; Lam & Yeoh, 2019b). The presence of multiple caregivers, however, does not always ensure a strong web of care for children. When both parents have migrated, children may be at the greatest risk of experiencing disruptions in care arrangements, greater exposure to family structure transitions, and low quality of care with less involvement and warmth (Lu et al., 2019; Lu et al., 2021). In addition, previous studies have highlighted the gendered patterns in the influence of parental migration on children's outcomes (for a review, see Antia et al., 2020). Thus, we differentiate between the gender of migrant parent(s). The findings from existing gender-differentiated studies of left-behind children are conflicting. Paternal migration and maternal migration present different challenges to family functioning. For example, father migration may disrupt parent-child intimacy as migrant fathers, compared with migrant mothers, are less involved in long-distance parenting directly (Madianou & Miller, 2011; Parreñas, 2008). Chen et al.'s (2020) meta-analysis highlighted the risk of child victimization and poor psychological adjustment among Chinese children in *mother-migrant families*. In contrast, children with migrant mothers show better psychological well-being in Ghana, where, overall, migrant mothers tend to send

remittances more frequently (Raturi & Cebotari, 2022). Variation in the outcomes may depend on caregiving practices associated with broader contextual factors (e.g., gender norms) and various domains of childcare needs.

The 'Care Triangle' in Migrant Families

In a family environment where one or both parents are migrants, the 'care triangle' emphasizes how care arrangements are negotiated among the migrant parent(s), the stay-behind caregivers, and the children (Graham et al., 2012; Suárez-Orozco et al., 2002). Interactions among these three groups within the care triangle are critical to children's experiences of caregiving through the process of parental migration. Although there is convincing evidence that the mental health of caregivers and the quality of care provided by them are significant predictors of child well-being (Manning & Gregoire, 2009; Rasic et al., 2014), how caregiving is associated with the other two groups within the care triangle in the context of parental migration is less clear.

According to the family stress theory (Conger et al., 2000; Patterson, 1998), migration, as a form of family transition and disruption, can generate chronic stressful experiences for both caregivers and children who stay behind. The migration of family members, especially female migration and migration to the Middle East, has been found to be associated with the adverse mental health outcomes of adults who stay behind (Graham et al., 2015; Knipe et al., 2019; Kumar, 2021). Graham et al.'s (2015) study found that stay-behind caregivers, especially *mother-caregivers,* were vulnerable to poor mental health. The poor psychological status of caregivers could decrease the quality of their caregiving, subsequently influencing the well-being of the children under their care. This hypothesis was supported by Lu et al.'s (2019) study, which

found that left-behind children's vulnerability in terms of psychosocial well-being could be explained by their caregiver's emotional distress and less involved caregiving practices.

Negotiations and resource exchanges within the care triangle inform the caregiving practices of migrant families (Bryceson, 2019; Graham et al., 2012). In Asia, where intergenerational exchanges are commonly practiced, family members left behind may tend to have relatively positive attitudes towards childcare, reflecting exchange expectation and obligation (Cong & Silverstein, 2011; Frankenberg et al., 2002). Such norms may facilitate a willingness among stay-behind family members to accept responsibilities for childcare, which in turn would contribute to stable and supportive caregiving for left-behind children (Fu & Law, 2017; Hoang & Yeoh, 2012). Migrant parents, despite their physical absence, are still actively involved in maintaining the connections of the care triangle. Remittances sent by migrants are linked to the better mental health of left-behind caregivers and reductions in their caregiving distress (Teerawichitchainan & Low, 2021). In contrast, caregivers can experience financial stress and emotional tension if migrants fail to provide sufficient financial support, which in turn decreases their capability to provide supportive care (Marchetti-Mercer, 2012).

Study Settings: Labor Migration in Indonesia and the Philippines

Southeast Asia is an important subregion of labor migrant supply, and labor migration continues to serve as a multigenerational poverty reduction strategy (IOM, 2019). Migrant workers make up over 90% of the total migrant population in the region (United Nations, Economic and Social Commission for Asia and the Pacific [UNESCAP], 2020). Indonesia and the Philippines are two well-established labor-sending countries within the region, and their migrants, especially female international migrants, comprise a significant share of overseas

foreign workers across the world. The comparable data allowed us to examine the country-specific impacts of parental migration as well as reflect the wider context of Southeast Asia.

The Philippines has the largest stock of international migrants (over 6 million) in Southeast Asia, followed by Indonesia, with around 4.6 million in 2020 (UNDESA, 2020). The Philippines exports labor migrants of various skill levels, including domestic workers and highly skilled workers with tertiary degrees (UNESCAP, 2020). More than three quarters of Indonesian labor migrants are low-skilled workers holding occupations such as domestic, agriculture, and construction workers (World Bank, 2017). The rising demand for domestic and care workers has contributed to a rising proportion of female workers within the migrant stock in Southeast Asia, the share of female migrants from Indonesia and the Philippines being 44% and 54%, respectively (IOM, 2021). In addition to international migration, a significant trend of internal migration from rural to urban areas is also present in both countries (UNESCO, 2018).

Remittance flows to Indonesia reached USD 9.7 billion in 2020. The Philippines, a lower-income country compared with Indonesia, relies heavily on remittances; international remittance inflows to the Philippines reached USD 35 billion in 2020, accounting for over 9% of the country's GDP (World Bank, 2022). While remittances do play a significant role in poverty reduction nationally and within families (Pholphirual, 2018), the high number of labor migrants, and specifically the increasing participation of mothers in labor migration, continue to draw attention to how families adjust care arrangements and to the quality of care for left-behind children. In the Philippines, around 27 percent of children have at least one parent working abroad (UNICEF, 2017). Although no accurate statistics are available, it is believed than millions of children in Indonesia are left behind by their migrant parents as most Indonesian labor migrants are reported to move without their families (UNESCO, 2018).

The Present Study: Research Framework and Questions

This study investigates the longitudinal associations between parental migration and children's psychological well-being. As argued, in addition to the lack of region-specific studies, a major research gap in the existing literature is the lack of longitudinal datasets to investigate the longer-term effects of parental migration on the mental health outcomes of children. The longitudinal approach can provide stronger evidence of the impacts of parental migration on child outcomes over time than the current preponderance of cross-sectional studies. The current study, an 8-year cohort study, assessed children's psychological well-being during early childhood (3 to 5 years old) and again in adolescence (11 to 13 years old).

Figure 1 illustrates the analytical model of this study based on the framework of the care triangle (Authors, 2012). We examine how parental migration interacts with caregiving-related factors to affect children's well-being.

Maintaining contact within the care triangle of migrant families is also crucial to the well-being of family members who stay behind. Therefore, we also examine the possible heterogeneity in children's well-being caused by frequency of contact. Daily contact with migrant parent(s) can be crucial in fostering long-distance parent-child intimacy and help children better understand how parental migration, as a household strategy, promotes the family's interests (Dreby, 2007; Lam & Yeoh, 2019a). Children's cognitive development and agency affect their roles in communication with migrant parent(s). Caregivers can have crucial influences on the frequency and efficacy of communication within the care triangle, particularly when young children have limited ability to participate in parent-child communication directly.

With respect to the roles of caregivers, we examine the potential moderating effects of caregiver's mental health and caregiving quality. As discussed, the diverse experiences of care

arrangements and the degree of children's adjustment are linked with the quality of care accessible to children. In addition to caregiver's mental health, we capture the quality of caregiving, conceptualized by caregiving quantity, availability, and stability. Caregiving quantity refers to the number of hours per day that a caregiver spends on care tasks for the sampled child. Caregiving availability depends on the number of children a caregiver is taking care of and on caregivers' access to support to provide quality care. Additionally, caregiving stability has a critical role in influencing caregiving quality. Mazzucato and Cebotari's (2017) study found that having a stable caregiver, rather than the type of caregiver, matters more to left-behind children's psychological well-being.

Taken together, this study aims to investigate the following research questions and hypotheses:

R1: How do parental migration, caregiver's mental health, and caregiving quality interact to influence child psychological well-being?

H1.1: Parental migration is associated with decreased child psychological well-being.

H1.2: Parental migration may impact child psychological well-being more negatively when children are cared for by a caregiver with poor mental health.

H1.3: Parental migration may impact child psychological well-being less negatively when the family maintains caregiving quantity, availability, and stability.

R2: How do the impacts of parental migration vary based on who has migrated and the frequency of communications?

H2.1: Mother-involved migration has stronger negative effects on child psychological well-being than father-only migration.

H2.2: Children who have less frequent contact with migrant parents are more vulnerable to poor psychological well-being than those who have frequent contact.

Methods

Data

This study used survey data from a longitudinal mixed-method project on Child Health and Migrant Parents in South-East Asia (CHAMPSEA). The first wave of data collection was conducted across four countries in the region (Indonesia, the Philippines, Thailand, and Vietnam) from 2008 to 2009. A second wave was completed in Indonesia and the Philippines from 2016 to 2017. CHAMPSEA employed a three-stage sampling strategy drawing on public health surveillance methods (Byass et al., 2002; Wilson et al., 2006). While the resultant samples are not nationally representative, replication is possible following strict protocols (see Authors, 2011, for a detailed discussion). The inclusion criteria for migrant households were as follows: 1) having a child in one of the two age groups of interest (aged 3 to 5 or aged 9 to 11 at time of first interview in 2008); 2) one or both parents working overseas for a continuous period of at least 6 months prior to interview. Children from families whose parents were not migrants in the previous 6 months and lived in the same communities were included as the comparison group. Households with a recent history of internal migration (in past 6 months) only were excluded. The 6-month period was chosen to provide findings comparable with previous studies in the field (e.g., Save the Children, 2006) and because it was considered a sufficient length of time to capture the non-transient effects of parental migration. Only one (index) child in each qualifying household was selected, with random selection employed if more than one child qualified, and all of the children's parents were heterosexual married couples at the time of recruitment in 2008.

The analytic sample draws on the young child cohort, aged 3 to 5 years in 2008 and approximately 11 to 14 in 2016/17. The first wave was conducted in two provinces/regions in each country. In Indonesia, we interviewed 522 households at the baseline and re-interviewed 481 households, and in the Philippines, we interviewed 501 households and followed up with 368 households, resulting in overall attrition rates of 8% and 27%, respectively, which are comparable or better than those of other studies in the region (Adair et al., 2011). After deleting cases with missing values for key variables, such as migrant status (we excluded one case with missing values of parental migrant status as both parents had passed away), and outcome variables (n = 9), the analytic sample was 840 households (475 in Indonesia and 365 in the Philippines) with 1680 observations.

The survey included three sets of questionnaires: 1) the household questionnaire capturing household characteristics, dynamics of family relationships, and migrant status of family members; 2) the caregiver questionnaire capturing caregiving characteristics and various aspects of the child's development; and 3) the child questionnaire capturing their well-being, education, behaviors, and perceptions about parental migration. Face-to-face interviews were conducted with the responsible adult in each household who could best answer questions about the family's background, the sampled child, and the child's caregiver.

Measures

Parental migration status. The household survey included questions about the current migrant status of parents, a module on migration history for the father and the mother, and information about nonresidential family members. On the basis of the answers, household migrant status was classified as nonmigrant or migrant depending on whether one parent or both parents were migrant workers for the majority of time in the 6 months preceding the interview

date, with nonmigrant households as the comparison group. We further differentiated the households with migrants into two types: father-only migration and mother-involved migration, the latter referring to conditions where either the mother migrated alone or migrated with the father. We classified mother-migration and both parents migration as one group because the percentage of both parents migration in the sample was less than 6% at both waves in both countries. Also, on the basis of the frequency of contact with migrant parent(s), households were also categorized into those having frequent contact with migrant family members, namely having daily contact in the past 6 months, and those having no frequent contact.

Children's psychological well-being. Child psychological well-being, the key dependent variable, was measured using the Strengths and Difficulties Questionnaire (SDQ) according to the caregivers' reports (we used age-specific versions of the SDQ according to children's age at the time of interview). The SDQ is a widely used screening questionnaire that assesses the behavioral and emotional well-being of children aged 3 to 18 years (Goodman, 2001). It has five dimensions, including internalizing and externalizing subscales as well as prosocial behaviors. Respondents rated 25 items from 0 (not true) to 2 (certainly true). We used the total difficulties score, which ranges from 0 to 40 and is calculated by summing the 20 items relating to difficulties with hyperactivity, emotional symptoms, conduct problems, and peer problems. A higher total difficulties score indicates a child's lower level of psychological well-being. The subscale of total difficulties showed an acceptable reliability, with the Cronbach's α being 0.61 and 0.71, respectively, for the Indonesian and Filipino samples.

Caregiver mental health. The mental health of the caregiver was measured using the 20-item Self-reporting Questionnaire (SRQ-20). SRQ-20 is a validated instrument to screen common mental disorders, especially in low- and middle-income countries (LMICs; World

Health Organization, 1994). Respondents answered yes/no questions related to certain pains and symptoms that may have bothered them in the last 30 days. The total SRQ score can be recoded as a binary variable, with a commonly used cut-off point of 7 or 8, to detect cases with common mental disorders (De Silva et al., 2007). The optimal cut-off point varies depending on the setting (rural or urban) and culture (Harpham et al., 2003); therefore, we used the continuous scores of the SRQ to make the results comparative across the two countries.

Caregiving quality. Caregiving quality was operationalized as quantity, availability, and stability. Caregiving quantity referred to the hours the caregiver spent on childcare per day. The level of parental/caregiver involvement in care tasks is likely to vary by child developmental stage, and the amount of time often declines as children grow up (Harvard Family Research Project, 2007; Hurley et al, 2017). Variations in hours of care have been found in the literature (ranging from 20 to 30 hours per week; National Institute of Child Health and Human Development Early Child Care Research Network, 2003), and childcare deficiency is particularly worse in LMICs (Ruiz-Casares & Nazif-Munoz, 2018). Here, we used the age-specific *Z*-score of care hours instead of raw hours. The availability of caregiving, such as the caregiver-child ratio, is essential to child well-being (Vandell & Wolfe, 2000). In this study, to capture the availability of caregiving in left-behind families, a dummy variable was created on the basis of answers to the question on whether the caregiver was taking care of more than one child in addition to the index child. Additionally, support from other family members can strengthen the capacity of the primary caregiver to care for the children. Solo caregivers are more likely to experience caregiver burden (Unson et al., 2016). We therefore used a dummy variable that denoted whether the caregiver had regular support to provide care. The stability of caregiving was assessed by whether there was a change of primary caregiver between the two waves as

prior studies have suggested that more changes of caregivers, especially within families experiencing care disruption, may lead to negative outcomes regarding children's behavior and social development (Bratsch et al., 2020; Pilarz & Hill, 2014)

Demographic covariables. The demographic covariables included were age of children and caregivers, child gender, household income, and assets. Household income was the monthly amount of all income-generating activities, including remittances sent from migrant parents. Productive and nonproductive assets were measured by the Asset Index, reflecting a household's long-term economic status, with a higher score indicating greater economic status (World Food Programme, 2017). The analysis also controlled for whether the index child had a younger sibling and the change in the marital status of their parents between the two waves (0 = married; 1 = divorced or separated; cases (n =35) whose father or mother had passed away were also recoded as 1).

Analytic Strategy

To estimate changes in children's psychological well-being over time, we mainly adopted a fixed-effects modeling strategy, using within-child variations in the migrant status of parents across the two time points as a predictor. The migration decision of parents is not random; rather, it depends on various unobserved factors, such as parenting ability and the income motivation of parents (Nguyen, 2016). Compared with the ordinary-least-squared models, the fixed-effects model allows for minimizing potential biases caused by unobserved characteristics which are considered time-invariant (Garret et al., 2009). We specified the association between parental migration and children's psychological well-being, as formulated below:

$$Y_{it} = \alpha_0 + \alpha_1 PM_{it} + \alpha_2 CHILD_{it} + \alpha_3 HH_{it} + \alpha_4 CARE_{it} + \alpha_i + \varepsilon_{it,}$$

where α_0 is the intercept; Y_{it} is a continuous measure of the psychological well-being of children *I* at the time *t*; and PM_{it} is a dummy variable measuring parental migrant status. When at least one parent has migrated at time *t*, PM_{it} takes the value of one; otherwise, it takes the value of zero. $CHILD_{it}$ represents a vector of the age of the child HH_{it} and $CARE_{it}$ represents a set of time-varying household and caregiving characteristics that may affect children's psychological well-being. The vector α_i accounts for unobserved time-invariant factors that may affect both parental migration and children's psychological well-being. Additionally, we included interactions between parental migration and covariables, such as child age and caregiver's mental health, to investigate how the effect of parental migration varies across different conditions. For parsimony, only significant interactions are displayed in the final models.

We further investigated whether who the migrant parent was would make a difference to children's psychological well-being. As argued, it is possible that children are more vulnerable to poor psychological well-being when the mother is involved in the migration rather than when only the father is a migrant. To test this hypothesis, we estimated the equation below:

$$Y_{it} = \alpha_0 + \alpha_1 FatherM_{it} + \alpha_2 MotherM_{it} + \alpha_3 CHILD_{it} + \alpha_4 HH_{it} + \alpha_5 CARE_{it} + \alpha_i + \varepsilon_{it},$$

where $FatherM_{it}$ is an indicator of the presence of a migrant father and $MotherM_{it}$ indicates having a migrant mother or/and a migrant father.

We also considered the frequency of contact between migrants and their families. We examined the effects of contact frequency on children's psychological well-being as follows:

$$Y_{it} = \alpha_0 + \alpha_1 Frequent_{it} + \alpha_2 NofrequentM_{it} + \alpha_3 CHILD_{it} + \alpha_4 HH_{it} + \alpha_5 CARE_{it} + \alpha_i + \varepsilon_{it},$$

where $Frequent_{it}$ and $Nofrequent_{it}$ respectively represent having or not having daily contact with migrant parent(s). We adjusted the standard errors for clustering of observations across the time periods at the individual level in all models.

In the fixed-effects models, unobserved variables may be correlated with the migration decision. For example, parents may be less likely to migrate if their children are in poor health or if they lack caregiving resources in the family, and thus fixed-effects models may underestimate the effects of parental migration on children's well-being. To address this issue, random-effects models, which assume that any omitted variables are distributed randomly, were also conducted. We used the Hausman test (1978) to compare the fixed-effects models with the random-effects models. For the fixed-effects models, the covariables included were age of children and caregivers, which changed over time. For the random-effects models, we controlled for children's gender and other time-varying factors at the household level (e.g., household income).

Results

Descriptive Results

Figure 2 represents the percentage of children having migrant parent(s) and parental care. In the Indonesia sample, over half of the children had one or two migrant parents in 2008. Similarly, 51% of the sampled Filipino children were left behind by one or both migrant parents in 2008. Over time, the percentage of children with migrant parent(s) decreased to 28% in Indonesia, compared to 42% in the Philippines. The prevalence of mother-involved migration among the Indonesian sampled households decreased from 33% to 16%, while such prevalence among the Filipino households increased slightly from 10% to 13%. When comparing migrant status across waves, the proportion of children who experienced parental migration in both waves was 19% in Indonesia and 31% in the Philippines. At Wave 2, the percentage of children

of returned migrant(s) was 29% in Indonesia and 17% in the Philippines. For the majority of the households with migrant fathers, the mothers remained as the primary caregivers at the two waves in both countries. When mothers migrated alone or with the fathers, half of children were cared for by grandparents/other relatives in Indonesia at the baseline, and this percentage decreased to 38% at Wave 2; around two thirds of the Filipino children were under kinship care (71% at Wave 1; 78% at Wave 2).

Table 1 presents the descriptive statistics for the key variables used in the analysis. For both countries, the average age and gender ratio of the sampled children were similar (likely reflecting the sampling approach). Both countries showed an increase in family dissolutions, with one quarter of parents reported as having separated or divorced by Wave 2. It was a common practice for caregivers in families to take care of more than one child in addition to the index child. With respect to caregiving quantity, the average number of hours that a caregiver spent caring was 13 hours per day for the Indonesian sample and 11 hours per day for the Filipino sample at Wave 1. The average number of care hours decreased over time when the index children entered early adolescence. The Indonesian caregivers were more likely to have regular support to provide care than the caregivers in the Philippines.

Regression Models

We report the regression models for the two countries according to the results of the Hausman test. The Hausman test indicated that the random-effects models were preferred over the fixed-effects models for the Indonesian sample, whereas the opposite was found for the Filipino sample. First, we estimated the net effects of having migrant parent(s) on children's psychological well-being. Having migrant parent(s) was significantly associated with poorer psychological well-being of children (Indonesia: B = 1.44, $p < .001$; The Philippines: B = 1.71, p

= 0.033). Still, the effect of parental migration became statistically insignificant when other caregiving-related and demographic variables were introduced (H1.1 was not supported).

We further included the interaction terms of the migration variables and caregiver mental health in the models as the caregiver's mental health exhibited detrimental effects on children's psychological well-being as expected. As shown in Table 2, the main effect of parental migration was not significant in both countries. Nonetheless, the Filipino children left behind by migrant parents and cared for by a caregiver with poor mental health were more likely to have poorer psychological well-being than those with nonmigrant parents (B = 0.32, p = 0.055, supporting H1.2).

Table 3 presents the models predicting how the type of parental migration influences children's psychological well-being. Although the net effects of *father migration* on children's poorer psychological well-being were significant in both countries (Indonesia: B = 2.03, $p < .001$; the Philippines: B = 1.99, p = 0.018), these effects were insignificant after controlling for other covariables. *Father migration* (H2.1 was not supported) in Indonesia and *mother-involved migration* (supporting H2.1) in the Philippines were associated with the decreased psychological well-being of left-behind children only when children were cared for by a caregiver with poor mental health. The discrepant patterns of parental migration's effects on child psychological well-being in the two countries provide further support for contextually informed analysis.

To better understand the heterogeneity of migrant families and care triangle dynamics, we examined the effects of contact frequency with migrant parent(s) on children's psychological well-being (Table 4). In Indonesia, for children with migrant parents, contact frequency did not have a significant effect on total difficulties scores (H2.2 was not supported). In the Philippines,

a lack of frequent contact with migrant parent(s) increased the risk of poor psychological well-being among children cared for by caregivers with poor mental health (supporting H2.2).

Among the variables measuring caregiving quality, only caring for more than one child was negatively associated with the psychological well-being of the Filipino children. We included the interaction terms of parental migration with this indicator for whether the caregiver took care of more than one child. The results showed that the interactions were insignificant (H1.3 was not supported).

Effects of Individual and Household Characteristics

We interpret the roles of other individual and household covariables on the basis of the results in Table 2. In both countries, children's younger age was associated with their poorer psychological well-being, but the effect was lessened as the children grew older. The results of random-effects models for the Indonesian sample indicated that the girls tended to have poorer psychological well-being compared to the boys. In Indonesia, caregiver's age was negatively associated with the total difficulties scores of children, but this was not found in the Philippines. In terms of household characteristics, having a younger sibling was associated with the poorer psychological well-being of the Indonesian children. Household assets, surprisingly, was negatively associated with Filipino children's psychological well-being.

Robustness Checks

We carried out a series of sensitivity analyses to check the robustness of the results and the potential bias associated with the panel attrition. First, we estimated the regression only including children whose caregivers remained the same across the two waves to address the concern that changes in caregiving arrangement may be endogenous to children's psychological well-being (see the results in Table A1- Panel 1 in the Appendix). The coefficients and

significance levels are similar to the above results. Second, we estimated the regressions including individual-level variables only to examine the possibility that the results were driven by changes in household characteristics. The results suggested that removing household characteristics might lead to biased estimates of migration, so we included household characteristics in the final models. Third, we estimated the regression after deleting households with return migrant parents at Wave 2 of the survey (n = 132 in Indonesia; n = 58 in the Philippines) to rule out the possibility that the total difficulties scores of children with current nonmigrant parents were not overestimated. The results were consistent with the estimation results using the full sample.

To assess the possibility of panel attrition, we examined any significant difference in migrant status, outcome variables, and other household covariates measured at Wave 1 by respondents and those lost at Wave 2. Parental migration and other household characteristics were not significantly correlated with the sample attrition in both countries, except for that the Filipino sample that dropped out were more likely to have lower scores total difficulties scores at Wave 1 ($F(1, 503) = 6.46$, $p < .05$). The estimates of the average scores of total difficulties in the Filipino sample may be biased upward.

Discussion

This pioneering study makes new contributions to the literature by examining the longer-term association between parental migration and children's well-being in two major labor-sending countries in Southeast Asia. This study expands a small but growing body of literature using longitudinal data to understand effects of parental migration on child development across diverse settings. Most existing longitudinal studies focus on children's physical growth (e.g., Nguyen, 2016), and efforts to examine psychological outcomes remain rare. Among the limited

studies, Cebotari et al.'s (2018) study in Ghana found that parental migration did not have significant long-term influences on children's psychological well-being, although prior cross-sectional data suggested that Ghanaian children from migrant households fared worse than their counterparts from nonmigrant households (Mazzucato et al., 2015). Longitudinal evidence from China suggested that the internal migration of parents increased left-behind children's vulnerability to depression over time (Lei et al., 2021; Zhou et al., 2018). The discrepancies underscore the importance of examining context-specific relationships. To the best of our knowledge, this study is the first attempt to examine the longer-term associations between parental migration and children's psychological well-being in Southeast Asia. One general finding is that there is no significant longer-term direct effect of parental migration on children's psychological well-being in both study settings (H1.1 was not supported). This finding echoes evidence from Ghana, which also has large-scale international labor migration, but contrasts with findings from research in China, where labor migration is largely domestic. Cebotari and Dito (2021) found that the internal migration of parents, but not international migration, was negatively associated with Ghanaian children's living conditions. Our findings further highlight the importance of differentiating forms of migration both within (e.g., domestic/internal) and between (e.g., international/cross-border) the national contexts where migration happens.

This study provides a comparative analysis of gendered patterns in the influence of parental migration on child psychological well-being. Our findings indicate that Indonesian children of migrant fathers left behind in the care of a caregiver with poor mental health are at risk of poor mental health themselves (H2.1 was not supported). This result is consistent with cross-sectional evidence suggesting that the migration of fathers, which may not change the child caregiving arrangements, can still generate adverse influences on children's psychological health

(Fu & Chen, 2021; Graham & Jordan, 2011). By contrast, we found that Filipino children with migrant mothers are vulnerable to poor psychological well-being when they are cared for by caregivers with poor mental health (supporting H2.1). One possible explanation is that compared with Filipino fathers, Indonesian fathers in mother-migrant families are more actively involved in childcare (Lam & Yeoh, 2018), and paternal involvement contributes to child well-being. Also, Indonesian fathers remaining behind often benefit from the strong support of their extended family in actual caregiving practices (Hugo, 2002). Additionally, we found that Filipino migrant mothers are less likely to practice 'engaged parenting', defined as having both frequent communication *and* providing frequent remittances, than Filipino migrant fathers (Authors, 2018), which could be explained by structural barriers that may reduce migrant mothers' opportunities of contacting the family left behind (Eremenko & Gonzalez, 2018). It might also be explained by the relationship between migrant mothers and the caregivers of children as maternal migration is sometimes referred to as 'Filipino divorce' (Timmerman et al., 2015), and the distant marital relationship may reduce Filipino mothers' chance of being involved in parenting (Authors, 2018). The two-country comparison demonstrates the complexities of understanding the influences of parental migration in different contexts. Although regional proximity contributes to the similarity between the two countries, the differences in the comparison reflect contextual factors, such as a higher prevalence of female migrants and international migrants from the Philippines than from Indonesia (IOM, 2021).

Supporting H2.2 partially, our findings suggest the adverse effects of less frequent contact with migrant parents on children's psychological well-being in the Philippines, but only when the children are cared for by a caregiver with poor mental health. Previous studies found that frequent contact between migrant parents and children could promote the well-being of both

migrant parents and left-behind children (Graham et al., 2012; Mazzucato et al., 2017; Niu et al., 2020). Our results highlight the important role of caregivers in maintaining children's contact with migrant parents, bolstering support for the care triangle theory. Despite advances in technologies that improve migrants' accessibility to multiple communication platforms, the quality of communication depends on many other factors. Communication between migrants and left-behind families shows asymmetries, as left-behind children may lack agency to decide when to call their parents and have limited access to a mobile phone (Madianou & Miller, 2011). Under such circumstances, it is the caregivers, especially those caring for younger children, who perform the function of arranging communication. Migrant parents from Southeast Asia utilize smartphones to reconstitute parenting roles and perform family practices, but there is a gap in technological competency between migrants and their families in the place of origin, especially for grandparent-caregivers lacking digital skills (Waruwu, 2021). Also, caregivers experiencing poor mental health may lack the capability to facilitate effective communication between migrant parents and left-behind children. Therefore, in addition to community mental health support, other programs could be developed for left-behind families to set up a regular communication schedule and help them to improve the use of advanced communication technologies to maintain family closeness over distance.

As we expected (H1.2), the mental health status of the caregiver stands out as one significant moderating factor, in accordance with the existing literature that demonstrates how the mental health of parents/caregivers increases the risk of their offspring experiencing poor psychological health over time (Murray et al., 2011; Weissman et al., 2016). Family members in migrant-sending areas, especially those who take on childcare responsibilities, may be exposed to increased psychological distress, heightened caregiving intensity, and reduced social support

(Lu, 2012; Teerawichitchainan & Low, 2021; Thapa et al., 2018), but their health has not attracted adequate attention. Hypothesis 1.3 was not supported as there was no interaction effect between parental migration and caregiving quality. An increased caregiving burden in the Philippines was associated with decreased child psychological well-being. According to UNDESA (2017), Filipino households have a higher average number of children aged under 15 compared with Indonesian households. Notwithstanding, the coverage of childcare services remains limited in the Philippines, while Indonesia has experienced a rapid expansion of pre-primary education and services (ILO, 2019; Rao & Sun, 2015). Inadequate provision of childcare and education services may make it more difficult for left-behind caregivers to receive non-family-based support, which consequently threatens children's well-being. Future research can consider wider community and social characteristics, such as access to social welfare and care-related facilities, as they may influence caregivers' and children's well-being.

We found that household assets were negatively associated with Filipino children's psychological well-being. The existing studies generally support the positive effects of household asset accumulation on children's well-being in the aspects of physical health, schooling outcomes, and emotional well-being (Chowa et al., 2010; Shanks et al., 2010). The result suggests that asset building driven by migration may not necessarily promote children's psychological well-being. Similarly, Chea and Wongboonsin's (2020) study found that remittances from migrant parents were negatively associated with spending on child education among poor Cambodian households. Remittances may fail to increase investment in children if households are still struggling to meet basic needs. Additionally, it is possible that among families who use remittances to build/renovate housing, this may increase the time left-behind children spend on household chores, which could influence their mental health. It is important to

acknowledge that the results for the two counties should be interpreted depending on two different modeling strategies, as indicated by the Hausman test. Fixed-effects models were not supported by the Indonesian data and thus random-effects model were applied, while fixed-effect models were more suitable for the Filipino data. The underlying assumption of the random-effects models is that observed predictors in the models are not correlated with the omitted variables, while the fixed-effect models allow them to be correlated (Vaisey & Miles, 2017). The coefficient estimates of the random-effects models represent the weighted averages of the within-child and between-child effects, while the fixed-effects models show within-child variance only (Bell et al., 2019).

Limitations

These results should be interpreted with other limitations in mind. Despite efforts to account for some sources of potential bias, we cannot completely rule out all potential biases, especially those relevant to the selectivity factors of migration. Migration or return does not happen randomly. Individuals who decide to migrate likely have different household characteristics to nonmigrants, and this difference may confound the effect of migration on health outcomes (Schenker et al., 2014). For example, migrant parents may negatively select to return due to the worsening health condition of their families in their place of origin. Estimations may be influenced by a lack of information regarding household characteristics that influence children's well-being before parents' migration.

The estimates of this study represent the average effects of migration on left-behind children, but studies examining the economic impacts of migration suggest duration-dependent heterogeneity in these impacts (Gibson et al., 2013). More attention should be paid to the continuity and transition of migration to allow for examining the resilience or vulnerability

trajectories of left-behind children. Further studies can consider applying sequence analysis to capture migration trajectories or use a life-history perspective to collect retrospective panel data to examine the cumulative effects of parental migration.

The measures of child well-being in this study were based on reports from their primary caregivers, given the young age of the sampled children at Wave 1 (3 to 5 years old). It is plausible that the mental health status of the caregivers would influence how they reported child well-being (Goodman & Tully, 2006; Wickramage et al., 2015). Regardless, the SDQ scores reported by caregivers often show internal consistency with those based on child self-report (Emerson, 2005).

Additionally, while this study captures aspects of caregiving quality for children, the data lacked adequate information on the efficacy of parenting, such as parental/caregiver attachment, involvement, and parenting style. To better provide tailored interventions, future work should consider more in-depth examination of family relationships and processes as well as contextual studies to identify community resources to better promote left-behind children's welfare in the family environment.

Conclusions

Despite these limitations, this study contributes to the current knowledge related to understanding the longer-term impacts of parental migration on children's well-being within a comparative perspective. The study advances our understanding of the care triangle as a key explanatory framework. The findings highlight potential service/policy directions to promote left-behind children's psychological well-being by providing preventive interventions to promote the mental well-being and communication capacities of their caregivers. Effective interventions require identifying left-behind families who are at high risk and making resources available at

the community level to meet caregivers' health needs and support their childcare responsibilities, especially in LMICs of the global south.

Credit author statement

Yao Fu: Conceptualization; Methodology; Formal analysis; Writing – original draft; Lucy P. Jordan: Conceptualization; Pro- ject administration; Funding acquisition; Writing (Editing & re- vision); Xiaochen Zhou: Methodology; Conceptualization; Su- pervision; Writing (Editing & revision); Cheng Chow: Data cura- tion; Writing (Editing & revision); Lue Fang: Software; Writing (Editing & revision)

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Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https:// doi.org/10.1016/j.socscimed.2023.115701.

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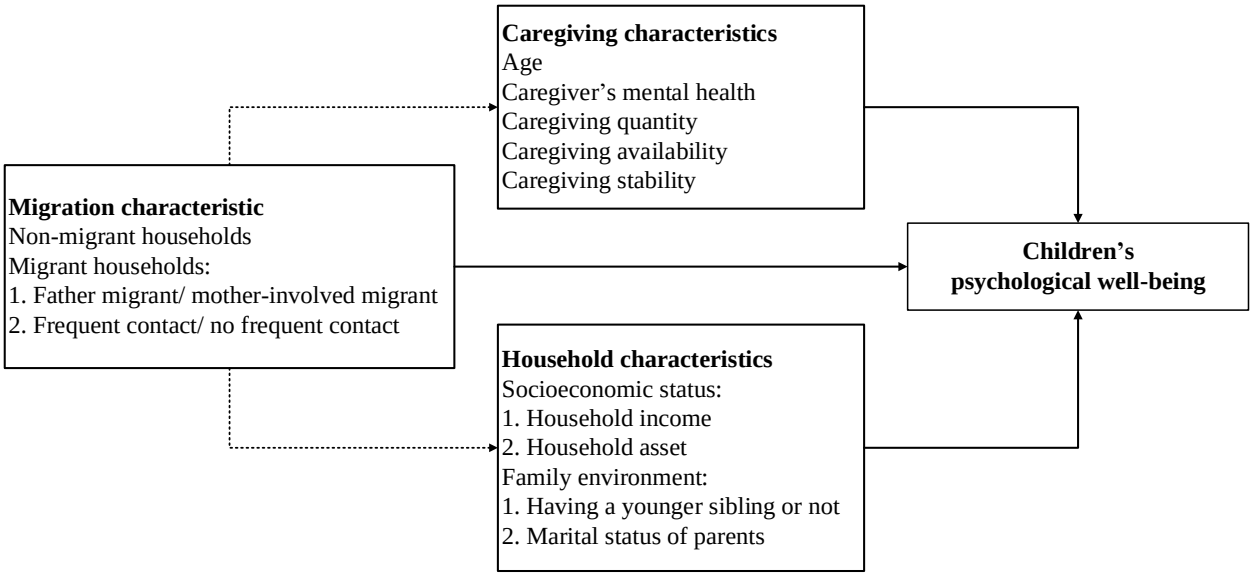

Fig. 1. An analytical model of parental migration and children's psychological well-being with moderators

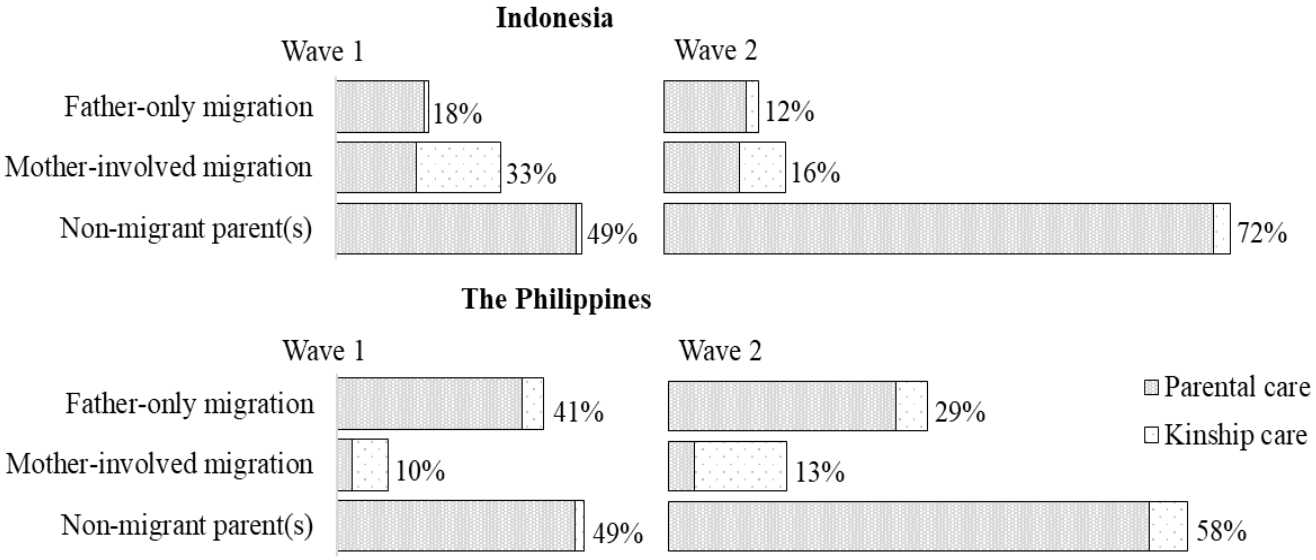

Fig. 2. The percentage of children having migrant parent(s) and caregiver types at 2 waves

Table 1

Descriptive statistics for the outcome variables and covariates used in the regression models.

	Indonesia		The Philippines	
	Wave 1	Wave 2	Wave 1	Wave 2
	Mean (*SD*) or Percentage (%)			
Child age	4.07 (0.81)	12.78 (0.87)	4.1 (0.81)	12.78 (0.86)
Child age range	3–5	11–14	3–5	11–14
Child gender (% of female)	49.90	50.55	50.93	53.43
Caregiver age	36.03 (10.82)	42.36 (8.65)	34.94 (10.13)	42.82 (10.4)
Child well-being - the SDQ's total difficulties core	14.36 (5.77)	9.13 (4.96)	14.5 (5.14)	9.91 (4.35)
Caregiver mental health – the SRQ scores	5.36 (4.71)	3.59 (3.55)	3.76 (3.2)	3.69 (3.01)
Hours spent on caregiving - Z scores	0.16 (1.04)	-0.14 (0.77)	-0.16 (0.92)	0.18 (1.2)
Caregiver cares for more than one child	46.09	58.64	65.22	62.46
Caregiver has regular support to provide care	89.38	52.08	95.03	46.99
Caregiver stability (% of change of a caregiver)	-	36.98	-	24.86
Household income in USD (logged)	4.52 (1.0)	5.26 (0.94)	5.48 (0.87)	5.59 (0.92)
Household assets (logged)	-0.61 (0.54)	-0.48 (0.44)	-0.94(0.76)	-0.82 (0.67)
Having younger sibling(s)	14.23	46.61	38.92	54.29
Marital change of parents (% of separated or divorced)	-	14.44	-	14.86

Note. SDQ = the Strengths & Difficulties Questionnaire. SRQ = Self-reporting Questionnaire. SD = Standard deviation.

Table 2

Effects of parental migration on children's well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Having migrant parent(s)	-0.18	0.49	-1.04	0.91
Caregiver mental health	0.46***	0.06	0.29*	0.11
Caregiving quality				
Hours spent on caregiving	0.26	0.18	-0.17	0.21
Caregiver cares for more than one child	-0.62	0.39	1.14*	0.60
Caregiver has regular support to provide care	-0.03	0.49	-0.56	0.61
Caregiving stability (ref.: the same caregiver)	-0.09	0.40	0.53	0.75
Individual and household characteristics				
Child age (years)	-1.92***	0.36	-2.19**	0.38
Child age squared	0.08***	0.02	0.09***	0.02
Child gender (ref: male)	-0.95**	0.33		
Caregiver age	-0.04*	0.02	0.03	0.03
Household income (logged)	0.08	0.16	-0.12	0.29
Household assets	0.15	0.36	0.90*	0.39
Marital status of parents (ref: married)	0.79	0.58	-0.97	0.96
Having younger sibling(s)	0.98*	0.47	-0.62	0.86
Interaction terms				
Parental migration×Caregiver mental health	0.06	0.08	0.32†	0.16
Constant	21.21***	1.71	21.86**	2.59
Observations	909		789	
Overall R^2	0.36		0.27	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p <0 .001$

Table 3

Effects of father/mother migration on children's well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Father-only migration	-0.64	0.62	-1.02	0.96
-Mother-involved migration	0.04	0.60	-0.74	1.32
Caregiver mental health	0.46***	0.06	0.29**	0.11
Caregiving quality				
Hours spent on caregiving	0.22	0.18	-0.20	0.21
Caregiver cares for more than one child	-0.60	0.39	1.15†	0.59
Caregiver has regular support to provide care	-0.11	0.40	-0.53	0.62
Caregiving stability (ref.: the same caregiver)	-0.03	0.50	0.22	0.80
Individual and household characteristics				
Child age (years)	-1.95***	0.36	-2.16**	0.38
Child age squared	0.08***	0.02	0.09***	0.02
Child gender (ref: male)	-0.99**	0.33		
Caregiver age	0.46***	0.06	0.03	0.03
Household income (logged)	0.08	0.16	-0.10	0.29
Household assets	0.13	0.36	0.88*	0.39
Marital status of parents (ref.: married)	0.80	0.58	-0.81	0.98
Having younger sibling(s)	0.95*	0.47	-0.70	0.86
Interaction terms				
-Father-only migration× Caregiver mental health	0.24*	0.11	0.24	0.18
-Mother-involved migration× Caregiver mental health	-0.04	0.09	0.54**	0.21
Constant	21.06***	1.75	21.08***	2.19
Observations	909		789	
Overall $\boldsymbol{R^2}$	0.36		0.26	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***p <0 .001

Table 4

Effects of frequent contact on children's psychological well-being, using FE/RE models.

	Indonesia		The Philippines	
	Random-effects (RE) model		Fixed-effects (FE) model	
	Coef.	SE	Coef.	SE
Parental migration status (ref. non-migrant parents)				
-Frequent contact with migrant parent(s)	-0.16	0.59	-0.76	1.11
-No frequent contact with migrant parent(s)	-0.32	0.64	-1.16	0.97
Caregiver mental health	0.46***	0.06	0.29**	0.11
Caregiving quality				
Hours spent on caregiving	0.27	0.18	-0.19	0.21
Caregiver cares for more than one child	-0.64	0.39	1.14†	0.59
Caregiver has regular support to provide care	-0.12	0.40	-0.60	0.61
Caregiving stability (ref.: the same caregiver)	0.04	0.49	0.50	0.76
Individual and household characteristics				
Child age (years)	-1.96**	0.36	-2.18**	0.38
Child age squared	0.09***	0.02	0.09***	0.02
Child gender (ref: male)	-0.98**	0.33		
Caregiver age	-0.05*	0.02	0.03	0.03
Household income (logged)	0.12	0.16	-0.13	0.28
Household assets	0.13	0.36	0.93*	0.39
Marital status of parents (ref: married)	0.80	0.59	-0.93	0.96
Having younger sibling(s)	1.00*	0.48	-0.65	0.86
Interactions				
-Frequent contact with migrant parent(s) ×Caregiver mental health	0.10	0.09	0.19	0.20
-No frequent contact with migrant parent(s)×Caregiver mental health	0.03	0.13	0.39*	0.18
Constant	21.15**	1.75	21.08**	2.19
Observations	900		789	
Overall R^2	0.36		0.27	

Note. †$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***p <0 .001