

Parental migration and left-behind children: Lessons learned from the Indonesian family life survey

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Abstract. Left-behind children of migrant workers face distinct challenges that may affect their emotional well-being and development. This study examined the impact of parental migration on the happiness, depressive tendencies, and cognitive development of Indonesian children, using two waves of the Indonesian Family Life Survey (IFLS4 and IFLS5). Cross-sectional analyses included 1,000–1,800 participants in IFLS 4 and 350–420 in IFLS 5, while longitudinal analyses linking both waves involved 1,300–2,200 participants. Data were analyzed using chi-square tests, ANOVA, and panel models in Stata. Cross-sectional results showed no differences in happiness or hedonic well-being by migration status. In IFLS 4, children of international migrant fathers reported fewer depressive symptoms ($M = 1.41$ vs. 4.01 for non-migrants) and higher cognitive scores ($M = 10.47$ vs. 9.18). In IFLS 5, significant effects were limited to maternal migration for depression ($M = 13.00$ vs. 16.10) and paternal migration for cognition ($M = 9.22$ vs. 7.98). Longitudinal analyses revealed more consistent patterns: children of international migrants, particularly mothers, showed lower depressive tendencies ($M = 5.04$ vs. 8.84) and higher cognitive development ($M = 9.71$ vs. 8.84), while happiness remained unaffected. These findings highlight both the risks and potential protective effects of parental migration on left-behind children.

1 Introduction

Southeast Asia is a significant source of international labour, with millions of workers leaving their home countries in search of better economic opportunities. According to the United Nations Department of Economic and Social Affairs (UN DESA), about 23.6 million migrant workers originated from Southeast Asia in 2020, with Indonesia contributing nearly 9 million, making it the region's second-largest sending country. Limited domestic employment and the lure of higher wages—often four to six times greater than in home communities—drive this migration, and the remittances sent back significantly improve household finances.

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Despite these benefits, migration also generates unintended social costs. Short-term migration schemes, such as the Temporary Foreign Worker Programme (TFWP), typically restrict workers from bringing families, resulting in many children being left behind. In this study, Left-Behind Children (LBC) refers to individuals under the age of 20 whose parents migrate abroad for at least six months. During parental absence, children may reside with the non-migrant parent, extended family members, or other caregivers. In Indonesian literature, the terms “children of migrant workers” and “LBC” are often used interchangeably, reflecting local usage and international research conventions.

While migration supports household economies through remittances, it also disrupts family systems and parenting practices, often reshaping caregiving roles and leaving children vulnerable to loneliness, diminished guidance, and developmental risks. Research highlights increased risks of anxiety, depression, and academic challenges among left-behind children (LBC), though outcomes vary depending on caregiver capacity, remittance use, gender norms, and community support. Most studies have focused disproportionately on China, with 82% of LBC research conducted there and only 7% in Southeast Asia, including Indonesia. Emerging Indonesian evidence shows that parental migration can negatively affect LBC’s social and mental well-being through stigma, disrupted emotional ties, caregiving challenges, and financial strain [1]. At the same time, effects on schooling are mixed—generally positive overall but shaped by the child’s age and whether the migrating parent is the mother or father [2]. The family systems framework underscores that parental absence destabilizes the household in ways that directly affect children, a concern also reflected in the United Nations Convention on the Rights of the Child, as substitute caregivers often lack the resources to provide adequate emotional and educational support.

Although prior research documents both the economic benefits of migration and the psychosocial costs for children, most existing studies rely on cross-sectional designs, limiting the ability to capture changes over time or establish causality. This highlights the need for longitudinal approaches to understand better how parental migration influences children’s psychological well-being and cognitive development. To address this gap, the present study draws on secondary data from the Indonesian Family Life Survey (IFLS), specifically IFLS4 (2007) and IFLS5 (2014). The IFLS offers nationally representative, longitudinal data with comprehensive measures on household demographics, health, education, and psychosocial outcomes. Its design makes it uniquely suited to analyze both immediate and long-term impacts of parental migration on LBC, while controlling for multiple confounding factors.

Specifically, this study tests the following hypotheses:

Hypothesis 1 (Cross-sectional effects): Parental migration is associated with differences in children’s happiness, hedonic well-being, depressive tendencies, and cognitive development.

Hypothesis 2 (Longitudinal effects): Parental migration has lasting impacts on children’s happiness, hedonic well-being, depressive tendencies, and cognitive development over time.

2 Method

2.1 Participants

This study did not involve primary data collection but instead utilized secondary data from the Indonesian Family Life Survey waves 4 (IFLS4, 2007/2008) and 5 (IFLS5, 2014). The analytic sample consisted of children and adolescents aged 7–20 years in 2007 who were unmarried, with the age classification following the developmental criteria outlined by [3]. Parental migration status was categorized into three groups: (1) domestic migrant workers, defined as parents with a domicile different from the child for at least six months but still within Indonesia; (2) international migrant workers, defined as parents residing abroad with

a different domicile from the child; and (3) non-migrant workers, where both parents shared the same domicile as the child. Migration status was observed in both IFLS4 and IFLS5. The cross-sectional sample sizes ranged from approximately 1,000–1,800 in IFLS4 and 350–420 in IFLS5, depending on the variable analyzed. For the longitudinal panel analysis linking IFLS4 and IFLS5, the sample size ranged from 1,300 to 2,200 participants.

2.2 Research Instrument

The instruments used in the IFLS were adapted into Indonesian using a back-translation method for survey instruments to ensure the quality of the data collected. A linguist conducted the initial translation into Indonesian. RAND hired two independent linguists to back-translate the items into English. The English back-translation was matched with the original English scales. A series of translated scales was extensively tested in two provinces in Indonesia, covering both urban and rural areas—a pretest stratified respondents by age, gender, and education level. The results showed that participants with formal education were able to understand the questions correctly [4]. Furthermore, the survey was conducted by trained and experienced interviewers who had passed the selection process and training conducted by SurveyMETER.

The measurement tools used in this study were:

a. Happiness Scale.

Happiness was measured using a single-item scale adapted from the Health and Lifestyle Survey (HLS, USA): “Considering your current situation, do you feel very happy, happy, unhappy, or somewhat unhappy?” This approach, also employed in the Indonesian Family Life Survey (IFLS) and international studies such as the World Values Survey, has been widely validated [5]. Single-item measures are valued for their simplicity, brevity, and directness, while maintaining strong correlations with objective well-being indicators and demonstrating temporal stability. Evidence also supports their validity in younger populations, where higher happiness scores are associated with better health and well-being, with stronger associations observed among girls [6].

b. Hedonic Well-Being 12 (HWB 12).

The HWB 12 is a hedonic well-being measurement instrument developed by Jacqui Smith and Arthur Stone and newly added to the survey since the IFLS5. The HWB 12 is a multidimensional scale consisting of positive affect (enthusiasm, satisfaction, pleasure), negative affect (frustration, sadness, loneliness, worry, boredom, anger), and psychosomatic symptoms (fatigue, stress, pain, or illness). The HWB 12 is part of the IFLS 3A textbook with the code PNA 06X [4]. In the IFLS5, the reliability of yesterday's positive affect experience has an α score of 0.79. The reliability of yesterday's negative affective experiences reached an α score of 0.83, and yesterday's psychosomatic symptoms had a reliability of $\alpha = 0.64$.

c. Depressive Tendency

Depressive tendencies were measured using the Centre for Epidemiologic Studies Depression Scale (CES-D) screening tool, initially developed by Radloff and then modified by Andresen to include ten items. The CES-D depression screening tool has been used in various international surveys to measure depressive symptoms and is suitable for use in both clinical and non-clinical samples. For the Indonesian context, the 10-item CES-D scale has been validated and used in the 1993–2014 IFLS [4]. Researchers and practitioners also widely use this scale to study mental health in Indonesia. The CES-D scale has a measurement reliability based on Cronbach's alpha score of 0.759, convergent validity of 0.462–0.635, and discriminant power of 0.407–0.533, which proves that this scale has good quality.

d. Cognitive Development Test

The cognitive development test in the IFLS questionnaire uses Raven's Colored Progressive Matrices to fill in the missing pieces based on the shape patterns in the questions. This cognitive section assesses abstract reasoning and an individual's overall cognitive ability. The IFLS test booklets are divided into two types: EK1 and EK2. The EK1 or Level 1 booklet is given to respondents aged 7-14 and consists of 12 cognitive questions and five simple math problems. The EK2 or Level 2 booklet is given to the older age group, 15-24, and consists of eight cognitive questions and five math problems with a higher level of difficulty than the EK1 booklet. The data set will be from IFLS Wave 4, conducted in 2007/2008, and IFLS Wave 5, conducted in 2014/2015. Research results show that the SPM in the Indonesian context has a reliability of 0.84. The SPM was also proven valid using the criterion validity method ($r(136) = 0.64$, $r_2 = 0.41$, $p < 0.01$).

Table 1. Summary of Instruments.

Variables	Operational Definition	Sections in IFLS	Variable Codes in Questionnaires	Data Set Code
Parent’s migration status	Information about parent’s domicile	For children aged 7-14: BAA 5-part book	BAA02 and BAA 05	b5_baa_Parents' migration status
	a. International migrant workers	For teenagers aged 15-20 years: Book 3B section BA	BA04 and BA14C	b3b_ba
	b. Domestic migrant workers			
	c. Not a migrant worker			
Happiness		Book 3A section SW / Subjective Well-being	SW12 (1 item)	b3a_sw_Happiness
Hedonistic Well-being	Total score of positive and negative impacts reported by respondents	Book 3A section PNA / Positive & Negative Influences	PNA06X and PNA07 (12 items)	1. b3a_pna1_Positive and negative effects
				2. b3a_pna2_Positive and negative influences
Depressive tendencies	Total score obtained by respondents from <i>the Center for Epidemiologic Studies Depression Scale</i> (CES-D)	Book 3B section KP/Psychological Health	KP02, AJ (10 items)	b3b_kp_Tendency to depression
Cognitive development	Total score obtained by respondents from <i>Raven's Colored Progressive Matrices</i>		There are two versions: • EK1 book for ages 7-14 years • EK2 book for ages 15-20 years	1. ek_ek1_Children's cognitive development ek_ek2_Adolescent’s cognitive development

2.3 Data Analysis Technique

Data analysis was conducted to obtain an overview of the correlations and differences between variables before and after parental migration. For this purpose, descriptive data analysis, bivariate analysis using the chi-square test (for happiness as a categorical variable) or ANOVA (for hedonic well-being, depressive tendencies, and cognitive development as continuous variables), and panel data analysis were conducted. Data processing was performed using Stata.

2.4 Ethical Aspects and Ethical Review

The IFLS survey and its procedures have been reviewed and approved for feasibility by the RAND Institutional Review Boards (IRB) in the United States (For IFLS5, the protocol approval/ethics clearance number is s0064-06-01-CR01). Gadjah Mada University (UGM) conducted an ethical review in Indonesia for IFLS3, IFLS4, and IFLS5. IFLS1 and IFLS2 were reviewed by the University of Indonesia (UI). Therefore, all consent requirements for adults and children were met and approved by the IRB before field data collection could begin. Written informed consent was obtained from all participants during the first interview. All personal data from participants is kept anonymous and confidential. This study was approved by the UGM Faculty of Psychology Ethics Committee under No. 3816/UN1/FPSi. 1.3/SD/PT.01.04/2022.

3 Result

3.1 Data Description

Descriptive statistics for the IFLS 4, IFLS 5, and combined samples are presented in Table 2.

Table 2. Descriptive Statistics of Key Variables Across IFLS Waves

Variable	IFLS 4 (N ≈ 1,800)	IFLS 5 (N ≈ 420)	Combined (N ≈ 2,200)
Happiness (M, SD)	3.42 (0.88)	3.38 (0.91)	3.41 (0.89)
Hedonic Well-Being (M, SD)	14.27 (3.61)	14.34 (3.48)	14.29 (3.59)
Depression (M, SD)	3.57 (5.14)	14.73 (7.26)	5.24 (6.98)
Cognitive Development (M, SD)	9.66 (3.21)	8.94 (2.90)	9.48 (3.15)
Age (M, SD)	13.6 (2.1)	14.2 (2.3)	13.7 (2.2)
Female (%)	49.8%	51.4%	50.1%
Migration Status			
Parental Migration Total	28.4%	27.1%	28.1%
Parental International	12.3%	11.6%	12.1%
Parental Domestic	16.1%	15.5%	16.0%
Paternal Migration Total	17.5%	16.9%	17.3%
Paternal International	8.9%	8.6%	8.8%
Paternal Domestic	8.6%	8.3%	8.5%
Maternal Migration Total	10.9%	10.2%	10.7%
Maternal International	5.1%	4.9%	5.0%
Maternal Domestic	5.8%	5.3%	5.7%
Non-Migrant Parent	43.2%	45.8%	43.9%

Note. Means and standard deviations are presented for continuous variables; percentages are shown for categorical variables. IFLS = Indonesian Family Life Survey.

Across waves, children reported moderately high levels of happiness ($M = 3.41$, $SD = 0.89$) and hedonic well-being ($M = 14.29$, $SD = 3.59$). Depression scores were considerably higher in IFLS 5 ($M = 14.73$, $SD = 7.26$) compared to IFLS 4 ($M = 3.57$, $SD = 5.14$), resulting in a combined average of 5.24 ($SD = 6.98$). Cognitive development scores were relatively stable across samples, with children scoring slightly higher in IFLS 4 ($M = 9.66$, $SD = 3.21$) than in IFLS 5 ($M = 8.94$, $SD = 2.90$). The mean age of participants was approximately 14 years, and the gender distribution was balanced across samples. Concerning migration, approximately 28% of children had at least one migrant parent, of which 12% involved international migration and 16% domestic migration. Paternal migration was more common than maternal migration (17% vs. 11%), with fathers slightly more likely to work internationally. Maternal migration was less prevalent overall, with international migration accounting for about half of maternal migration cases. This breakdown highlights that while parental migration is widespread, the patterns differ notably by parent and by type of migration (international vs. domestic).

3.2 Assumption Testing

Prior to hypothesis testing, statistical assumptions were examined to ensure the appropriateness of the chosen analytical techniques. For Chi-Square analyses, the assumption of independent observations was considered inherent in the study design. Fisher’s Exact Test was applied when expected cell frequencies were below recommended thresholds, thereby addressing potential violations of the minimum expected frequency assumption. For ANOVA analyses, the assumption of homogeneity of variances across groups was assessed using Bartlett’s test. The results indicated that this assumption was satisfied for most outcome variables (hedonic well-being and cognitive development in IFLS 4, IFLS 5, and combined samples). At the same time a violation was observed for depressive symptoms in IFLS 4 ($p < .01$). In such cases, the use of robust alternatives such as Welch’s ANOVA or non-parametric methods (e.g., Kruskal-Wallis test) is recommended.

3.3 Hypothesis Testing

3.3.1 Cross-Sectional Analyses

Table 3. Descriptive Statistics of Key Variables Across IFLS Waves

Outcome Variable	Dataset	Parental Migration Status Tested	Test Statistic	p-value	Result
Happiness	IFLS 4	Parents (overall)	$\chi^2(6, N=1012)=6.176$; $\chi^2(2, N=1012)=3.548$	0.404; 0.170	n.s.
		Father	$\chi^2(6, N=983)=5.227$; $\chi^2(2, N=983)=3.535$	0.515; 0.172	n.s.
		Mother	$\chi^2(6, N=1011)=9.221$; $\chi^2(2, N=1011)=4.931$	0.162; 0.085	n.s.
	IFLS 5	Parents (overall)	$\chi^2(6, N=363)=4.349$; $\chi^2(2, N=363)=0.223$	0.630; 0.894	n.s.
		Father	$\chi^2(6, N=345)=3.211$; $\chi^2(2, N=345)=0.490$	0.782; 0.783	n.s.
		Mother	$\chi^2(6, N=362)=2.580$; $\chi^2(2, N=362)=0.803$	0.859; 0.669	n.s.
Hedonic well-being	IFLS 5	Parents (overall)	$F(2,360)=0.95$	>0.05	n.s.
		Father	$F(2,342)=0.06$	>0.05	n.s.
		Mother	$F(2,359)=0.31$	>0.05	n.s.

Analysis of both IFLS 4 and IFLS 5 data indicated that parental migration status was not significantly associated with children’s self-reported happiness. For example, in IFLS 4, overall parental migration status showed no significant relationship with happiness, $\chi^2(6, N = 1012) = 6.18, p = .404$, and a similar nonsignificant pattern was observed in IFLS 5, $\chi^2(6, N = 363) = 4.35, p = .630$. No significant associations emerged when the migration statuses of fathers and mothers were tested separately.

Parallel results were observed for hedonic well-being. In IFLS 5, positive and negative affect did not differ by parental migration status, $F(2,360) = 0.95, p > .05$, nor by paternal, $F(2,342) = 0.06, p > .05$, or maternal migration, $F(2,359) = 0.31, p > .05$. Together, these findings suggest that parental migration had no cross-sectional effect on either global happiness or hedonic well-being.

Table 4. Differences in Depressive Tendencies by Parental Migration Status

Dataset	Migration Type	International (M ± SD)	Domestic (M ± SD)	Non-Migrant (M ± SD)	F(df)	p-value	Post-hoc
IFLS4	Parental	2.40 ± 4.52	3.85 ± 5.43	3.45 ± 5.01	F(2,1781)=7.46	<0.001	Intl < Domestic, Non-migrant
	Father	1.41 ± 3.49	3.69 ± 5.42	4.01 ± 5.05	F(2,1745)=11.69	<0.001	Intl < Domestic, Non-migrant
	Mother	3.18 ± 5.04	4.99 ± 5.70	5.11 ± 5.55	F(2,1329)=6.76	<0.001	Intl < Domestic, Non-migrant
IFLS5	Parental	13.00 ± 8.94	14.12 ± 6.32	16.10 ± 5.73	F(2,412)=1.49	>0.05	n.s.
	Father	13.50 ± 7.21	14.10 ± 6.55	15.77 ± 6.02	F(2,391)=0.68	>0.05	n.s.
	Mother	13.00 ± 8.94	14.12 ± 6.32	16.10 ± 5.73	F(2,387)=6.24	<0.001	Intl < Non-migrant

Note: Stronger protective effects of international migration on depression were evident in IFLS4 and persisted longitudinally but were less consistent in IFLS5.

By contrast, depressive tendencies showed clear differences in IFLS 4. Children of international migrant parents had lower depression scores ($M = 2.40$) compared to children of domestic ($M = 3.85$) and non-migrant parents ($M = 3.45$), $F(2,1781) = 7.46, p < .001$. This pattern was consistent across paternal and maternal migration: international migrant fathers’ children ($M = 1.41$) reported fewer depressive symptoms than those of domestic ($M = 3.69$) and non-migrant fathers ($M = 4.01$), $F(2,1745) = 11.69, p < .001$. Similarly, children of international migrant mothers ($M = 3.18$) reported fewer symptoms than those of domestic ($M = 4.99$) and non-migrant mothers ($M = 5.11$), $F(2,1329) = 6.76, p < .001$.

In IFLS 5, these effects were weaker, with only maternal migration showing a significant difference: children of international migrant mothers reported lower depressive symptoms ($M = 13.00$) than those of domestic ($M = 14.12$) and non-migrant mothers ($M = 16.10$), $F(2,387) = 6.24, p < .001$

Table 5. Differences in Cognitive Development by Parental Migration Status

Dataset	Migration Type	International (M ± SD)	Domestic (M ± SD)	Non-Migrant (M ± SD)	F(df)	p-value	Post-hoc
IFLS4	Parental	10.25 ± 3.31	9.92 ± 3.25	9.78 ± 3.27	F(2,1783)=2.54	>0.05	n.s.
	Father	10.47 ± 3.33	9.94 ± 3.27	9.18 ± 3.22	F(2,1747)=9.08	<0.001	Intl > Domestic, Non-migrant

Dataset	Migration Type	International (M ± SD)	Domestic (M ± SD)	Non-Migrant (M ± SD)	F(df)	p-value	Post-hoc
IFLS5	Mother	9.81 ± 3.35	9.25 ± 3.06	9.02 ± 3.00	F(2,1329)=3.40	<0.05	Intl > Non-migrant
	Parental	9.55 ± 2.70	9.07 ± 2.87	8.75 ± 3.11	F(2,412)=1.75	>0.05	n.s.
	Father	9.22 ± 2.52	8.91 ± 2.80	7.98 ± 3.28	F(2,391)=3.04	<0.05	Intl > Non-migrant
	Mother	9.50 ± 2.60	9.15 ± 2.85	8.90 ± 3.02	F(2,387)=1.28	>0.05	n.s.

Note: Consistent cognitive advantages were observed for children of internationally migrated fathers (both IFLS4 & IFLS5), with weaker or null effects for mothers.

Cognitive outcomes also differed by migration status in IFLS 4. While overall parental migration was not significant, paternal migration was strongly associated: children of international migrant fathers had the highest cognitive scores (M = 10.47) compared to domestic (M = 9.94) and non-migrant fathers (M = 9.18), F(2,1747) = 9.08, p < .001. Maternal migration showed a more minor but significant effect, with children of international migrant mothers scoring higher (M = 9.81) than those of domestic (M = 9.25) and non-migrant mothers (M = 9.02), F(2,1329) = 3.40, p < .05.

In IFLS 5, overall parental migration was nonsignificant. However, paternal migration again mattered: children of international migrant fathers scored higher (M = 9.22) than those of domestic (M = 8.91) and non-migrant fathers (M = 7.98), F(2,391) = 3.04, p < .05. Maternal migration was not significant in IFLS 5.

3.3.2 Longitudinal Analyses

Table 6. Longitudinal Impact of Parental Migration on Children Outcomes

Outcome	Migration Type	International (M ± SD)	Domestic (M ± SD)	Non-Migrant (M ± SD)	Test Statistic	p-value	Post-hoc
Happiness	Parental	–	–	–	χ²(6, N=1375)=7.83	0.251	n.s.
	Father	–	–	–	χ²(6, N=1328)=8.32	0.215	n.s.
	Mother	–	–	–	χ²(6, N=1373)=8.08	0.233	n.s.
Depressive Tendencies	Parental	4.28 ± 6.76	5.74 ± 6.96	6.26 ± 7.62	F(2,2196)=6.32	<0.001	Intl < Domestic, Non-migrant
	Father	3.30 ± 6.40	5.66 ± 7.03	5.95 ± 7.00	F(2,2139)=8.25	<0.001	Intl < Domestic, Non-migrant
	Mother	5.04 ± 7.08	6.47 ± 6.71	8.84 ± 7.65	F(2,1719)=29.00	<0.001	Intl < Domestic, Non-migrant
Cognitive Development	Parental	9.99 ± 3.27	9.67 ± 3.19	9.15 ± 3.36	F(2,2198)=4.60	<0.05	Intl > Non-migrant
	Father	10.28 ± 3.24	9.75 ± 3.21	8.98 ± 3.26	F(2,2141)=11.56	<0.001	Intl > Domestic, Non-migrant
	Mother	9.71 ± 3.30	9.17 ± 3.02	8.84 ± 2.90	F(2,1719)=6.03	<0.001	Intl > Non-migrant

Longitudinal analyses across IFLS 4 and IFLS 5 showed no significant association between parental migration status and children's reported happiness. For example, overall parental migration status was unrelated to happiness, $\chi^2(6, N = 1375) = 7.83, p = .251$, and similar nonsignificant findings emerged when paternal and maternal migration statuses were tested separately (all $ps > .05$). These results suggest that parental migration does not exert lasting effects on children's global happiness.

In contrast, depressive tendencies showed consistent longitudinal differences. Children of international migrant parents reported lower depressive symptoms ($M = 4.28$) than children of domestic ($M = 5.74$) and non-migrant parents ($M = 6.26$), $F(2,2196) = 6.32, p < .001$. This pattern was robust across both paternal and maternal migration. For paternal migration, children of international migrant fathers exhibited markedly fewer depressive symptoms ($M = 3.30$) than those of domestic ($M = 5.66$) and non-migrant fathers ($M = 5.95$), $F(2,2139) = 8.25, p < .001$. Maternal migration had an even more substantial effect: children of international migrant mothers reported the lowest depressive symptoms ($M = 5.04$), compared to those of domestic migrant mothers ($M = 6.47$) and non-migrant mothers ($M = 8.84$), $F(2,1719) = 29.00, p < .001$. Together, these findings indicate that international migration—particularly maternal migration—has a protective longitudinal effect against depressive tendencies.

Parental migration status was also associated with children's cognitive outcomes over time. Children of international migrant parents scored higher in cognitive development ($M = 9.99$) compared to those of domestic ($M = 9.67$) and non-migrant parents ($M = 9.15$), $F(2,2198) = 4.60, p < .05$.

Disaggregated analyses confirmed stronger effects for paternal and maternal migration separately. Children of international migrant fathers demonstrated higher scores ($M = 10.28$) relative to domestic ($M = 9.75$) and non-migrant fathers ($M = 8.98$), $F(2,2141) = 11.56, p < .001$. Similarly, children of international migrant mothers performed better ($M = 9.71$) compared to domestic ($M = 9.17$) and non-migrant mothers' children ($M = 8.84$), $F(2,1719) = 6.03, p < .001$. These results highlight that international parental migration—again with a stronger maternal effect—was associated with enhanced cognitive development over time.

Across both waves, the cross-sectional analyses yielded relatively weak or inconsistent associations between parental migration and child outcomes. In IFLS 4 and IFLS 5, happiness and hedonic well-being did not differ significantly by migration status. Differences were observed only in specific domains: for example, in IFLS 4, children of international migrant fathers and mothers showed lower depression risk and higher cognitive development compared to children of domestic or non-migrant parents, while in IFLS 5, significant effects were limited to maternal migration for depression risk and paternal migration for cognitive development. By contrast, the longitudinal analyses demonstrated stronger and more consistent patterns. Over time, children of international migrant parents—particularly international migrant mothers—exhibited significantly lower depressive tendencies and higher levels of cognitive development, whereas happiness remained unaffected.

4 Discussion

This study investigated the effects of parental migration on Indonesian children's happiness, hedonic well-being, depressive tendencies, and cognitive development using two waves of the Indonesian Family Life Survey (IFLS4 and IFLS5), both cross-sectionally and longitudinally. Two major conclusions emerge. First, parental migration did not significantly influence children's reported happiness or hedonic well-being in either the cross-sectional or longitudinal analyses. Second, parental migration—particularly international migration—was consistently associated with lower depressive symptoms and enhanced cognitive development, with maternal migration showing powerful protective effects over time.

4.1 Happiness and Hedonic Well-Being

Across both IFLS 4 and IFLS 5, as well as longitudinal analyses, no significant associations emerged between parental migration status and children's happiness or hedonic well-being. These findings suggest that migration-related parental absence neither increases nor decreases children's affective well-being. This aligns with research showing that children's hedonic states are strongly influenced by stable social environments, personality traits, and

peer relations rather than household employment shocks [7]. Moreover, in collectivist societies such as Indonesia, extended kinship networks and community support can buffer potential emotional disruption, helping children maintain baseline levels of well-being [8].

Notably, the null effects highlight a distinction: migration may reduce negative states such as depression (see below) without necessarily amplifying positive states. Hedonic well-being reflects affective balance, which is less responsive to external household changes and more anchored in peer attachment and school environments [9]. Thus, the absence of effects here underscores children's emotional resilience and the protective role of cultural-social structures in Indonesia.

4.2 Depressive Tendencies

In contrast, parental migration showed apparent effects on depressive outcomes. In IFLS 4, children of international migrant parents—both fathers and mothers—reported significantly lower depression risks compared to peers of domestic migrants or non-migrants. This pattern was weaker in IFLS 5 cross-sectional analyses, where only maternal migration remained protective. Notably, the longitudinal results confirmed that both paternal and maternal international migration were consistently linked with lower depressive tendencies over time.

These results echo recent findings from China, where parental migration reduced depressive symptoms when coupled with stable caregiving [10], but extend them to the Indonesian context. Two mechanisms can explain the protective effect. First, international migration enhances household financial stability, reducing stressors linked to poverty, a key driver of children's depression [9]. Second, maternal migration showed more substantial longitudinal protective effects. This may be because migrant mothers' remittances are often allocated directly to children's education, health, and well-being, and caregiving tends to be entrusted to female relatives (e.g., grandmothers), creating emotionally supportive environments [11]. Over time, these arrangements reinforce children's emotional resilience, explaining why maternal migration yielded clearer protective outcomes in the longitudinal data.

4.3 Cognitive Development

Parental migration also had significant implications for children's cognitive development. Cross-sectionally, international paternal migration consistently predicted higher cognitive development, whereas maternal effects were observed in IFLS 4 but not in IFLS 5. However, longitudinal results showed robust advantages for both paternal and maternal international migration. Children in these households demonstrated higher cognitive development scores compared to peers of domestic migrants or non-migrants.

These results align with evidence that remittances facilitate greater access to educational resources, tutoring, and stimulating home environments, thereby enhancing cognitive outcomes [12]. Moreover, intergenerational resilience mechanisms suggest that parental migration fosters adaptive coping and educational aspirations, which benefit children's cognitive growth across time [13]. In Southeast Asia, studies have shown that migrant remittances are often invested in children's education, raising both material support and academic expectations [14].

In Indonesia specifically, kinship-based caregiving structures play a crucial role: caregivers not only maintain children's daily routines but also often place a high value on school success, amplifying the cognitive benefits of migration-supported households [9]. This explains why the effects of international migration are enduring and stronger longitudinally, as economic stability and consistent educational investment accumulate benefits over time.

A notable pattern across the analyses is the divergence between cross-sectional and longitudinal findings. The cross-sectional results from IFLS 4 and IFLS 5 showed relatively weak or inconsistent associations between parental migration and child outcomes: happiness and hedonic well-being were unaffected, while differences in depression risk and cognitive development emerged only in specific cases (e.g., paternal or maternal migration effects, depending on wave). By contrast, the longitudinal analyses demonstrated stronger and more consistent effects. Over time, international parental migration, particularly maternal migration, was systematically associated with reduced depressive tendencies and higher cognitive development, while happiness again remained unaffected. This contrast suggests that the immediate, short-term impacts of parental migration may be muted or unstable, but that sustained exposure to the socioeconomic and psychosocial benefits of international migration produces measurable, lasting advantages for children's mental health and cognitive growth.

Several limitations must be noted—first, the variation of sample sizes across the cross-sectional and longitudinal analyses. While the IFLS4 cross-sectional models benefited from relatively large samples (approximately 1,000–1,800 participants), the IFLS5 analyses were based on substantially smaller samples (350–420 participants), which may have reduced statistical power and the ability to detect significant effects in later waves. In contrast, the longitudinal panel analyses, which linked IFLS4 and IFLS5, achieved larger samples (1,300–2,200 participants). However, these estimates may still be affected by attrition bias, as families experiencing migration-related challenges may be more likely to drop out of follow-up. These discrepancies in sample size and potential selection effects should be considered when interpreting the consistency of findings across time. Second, the psychosomatic symptoms scale (a subscale in the Hedonic Well-Being 12) used in this study demonstrated a relatively low internal consistency (Cronbach's $\alpha = .64$), which represents a limitation. Lower reliability suggests that the items may not fully capture the construct, potentially introducing measurement error and reducing the strength of associations with other variables. However, the instrument was retained for analysis because it has been widely used in previous large-scale surveys, allowing for comparability with existing research. Moreover, the shorter scale reduced participant burden and ensured feasibility in the context of a multidimensional questionnaire. While acknowledging this limitation, we emphasize that the scale still provides meaningful insights into psychosomatic symptoms.

5 Conclusion

Hypothesis 1 (Cross-sectional effects) predicted that parental migration would be associated with differences in children's well-being and development. The results provided partial support. Across both IFLS 4 and IFLS 5, parental migration showed no significant associations with children's happiness or hedonic well-being, suggesting that affective well-being remains stable regardless of parental migration. However, meaningful differences emerged for depression and cognitive development. In IFLS 4, children of international migrants—particularly fathers—reported lower risks of depression and higher cognitive development compared to children of domestic migrants or non-migrants. In IFLS 5, maternal international migration was significantly protective against depression, while paternal international migration was associated with higher cognitive development scores. These findings suggest that parental migration may exert selective, but important, cross-sectional benefits for left-behind children.

Hypothesis 2 (Longitudinal effects) proposed lasting effects of parental migration. Longitudinal analyses confirmed these protective patterns. As in the cross-sectional results, happiness and hedonic well-being were unaffected. However, children of internationally migrated parents consistently reported lower depressive tendencies over time, with maternal

migration showing the most potent protective effect. Similarly, international parental migration was associated with higher cognitive development trajectories, with both paternal and maternal migration contributing positively.

Taken together, these findings indicate that while parental migration does not influence short- or long-term affective happiness, it can provide enduring benefits for mental health and cognitive development. International migration appears to buffer against depression and enhance cognitive development, with maternal migration most protective for emotional well-being and paternal migration most beneficial for cognitive outcomes. These results highlight the importance of distinguishing between immediate versus longitudinal impacts and maternal versus paternal pathways when evaluating the consequences of parental migration for Indonesian children.

6 Implication

This study underscores the importance of considering not only the economic dimension of migration, but also the psychosocial mechanisms (e.g., quality of caregiving, remittance use, kinship support) that mediate children's outcomes. Future studies should investigate the mechanisms underlying the relationship between international parental migration and lower risk of depression and improved cognitive development, with a focus on remittance use, caregiving quality, and communication patterns. Gender differences, especially the distinct effects of maternal migration, warrant closer examination, as do cultural perspectives on happiness, given the absence of effects on subjective well-being.

Policymakers should not only facilitate the flow of remittances but also focus on strengthening caregiver capacity and ensuring remittances are invested in education and child development. This would maximize the developmental benefits of migration while minimizing risks. Policy efforts should focus on strengthening support systems for left-behind children, particularly by assisting substitute caregivers, improving access to mental health services in schools, and promoting the use of remittances for educational purposes. Facilitating affordable communication between migrants and their children and integrating migrant family needs into child protection and education policies may help ensure that migration supports not only economic gains but also the well-being and development of children.

To overcome discrepancies in sample size, future research could complement secondary data analysis with targeted primary data collection on migrant households or employ mixed method approaches that combine quantitative survey analysis with qualitative interviews to capture more nuanced aspects of parental migration and its long-term effects on children. As for overcoming the weaknesses of the psychosomatic symptoms scale in the Hedonic Well-Being 12, future research could enhance this measure by refining items, expanding the item pool, or validating alternative reliability indices.

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