

Finding Factors as Predictors of Children's Well-being Focusing On Resilience During the COVID-19 Pandemic Based on Analysis Results of the "Survey on Children's Daily Life Among Eight Asian Countries 2021"

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Abstract

This study aimed to obtain implications on childrearing and childcare practices for achieving children's well-being through analyzing factors predicting children's well-being during the COVID-19 pandemic in eight Asian countries. We primarily focused on "resilience," the ability to cope with and recover from difficult situations, which had been confirmed from previous studies as a positive factor towards children's development in the context of hardships. We also chose other potential predictors referring to Bronfenbrenner's ecological systems theory, including mothers' concerns about COVID-19, household income, number of playmates, support from childcare facilities/schools, family environments, and children's lifestyles, and examined how these predictor variables predict children's well-being. We found that children's resilience strongly predicted their well-being, which was common in all eight countries. Family factors and children's daily life factors were also associated with children's well-being. The country-specific analysis also indicated the importance of support from childcare facilities/schools on well-being. Well-being and resilience are both psychological constructs and often studied as important indicators of child health. Resilience has been spot-lighted as an effective protective factor for children experiencing adversities such as the COVID-19 pandemic. We have found that resilience was the strongest predictor of well-being among other factors even during the COVID-19 pandemic.

Keywords : well-being, resilience, children, Asia

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Introduction

COVID-19 and Children's Well-being

Previous studies have shown that the prolonged COVID-19 pandemic has negative psychological consequences (Tull et al., 2020) as well as negative effects on children's well-being (good state of mind and body, happiness) (Mochida et al., 2021). Under such circumstances, Child Research Net (CRN) conducted an international collaborative survey from August to November 2021, in the midst of the pandemic, with researchers from eight Asian countries, in order to obtain implications on childrearing and childcare practices for achieving children's well-being through analyzing factors that predict children's well-being during the pandemic. ^{*1} The eight Asian countries were: Japan, China, the Philippines, Malaysia, Taiwan, Indonesia, Singapore, and Thailand.

In this survey, we primarily focused on children's resilience, the capacity to adapt and recover from adversity. Previous developmental studies confirmed that resilience refers to positive development in a context of high risk for problems or maladjustment (Masten, 2014). Therefore, we hypothesized that children's resilience is a predictor variable of their well-being in difficult situations such as the COVID-19 pandemic.

We also chose other potential predictors referring to Bronfenbrenner's ecological systems theory (Bronfenbrenner, U., 1994; Guy-Evans, 2020). This theory posits that human development is positively affected by interactions with the external environments (ecological systems) surrounding them. Bronfenbrenner placed children in the center and classified such ecological systems surrounding children into five nested levels: Microsystem, Mesosystem, Exosystem, Macrosystem, and Chronosystem. In this study, we set explanatory variables based on four factors of the child: him/herself, Micro- & Mesosystem (most immediate environment for the child), Exosystem (extended concept of micro- & mesosystem), and Macrosystem (reflecting society under the COVID-19 pandemic).

Finally, we formulated a survey plan by setting these predictor variables against children's well-being (objective variable). Valid responses were obtained from 1,973 mothers of five-year-olds (in eight countries) and 1,372 mothers of seven-year-olds (in six countries excluding China and Singapore). We found that resilience was the strongest predictor of well-

being among other factors even during the COVID-19 pandemic.

Definition and Measurement of Well-being

The United Nations World Health Organization (WHO) defines "health" as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Based on this definition, we use the term "well-being" in the sense of "individuals' sound physical and mental health and happiness."

This survey used the KINDL^R scale to measure children's well-being. The KINDL^R was developed by Ravens-Sieberer and Bullinger as a generic instrument for assessing the health-related quality of life (QOL) in children and adolescents aged three years and older. The scale consists of 24 items with six QOL domains (physical well-being, emotional well-being, self-esteem, family relationship, friends, and everyday functioning (schools/childcare facilities)).

Definition and Measurement of Resilience

The term "resilience" was first used by the American developmental psychologists Emmy Werner and Ruth Smith. They conducted a longitudinal study targeting about seven hundred children exposed to various risk factors. Of them, one-third exhibited sound development and adaptation. Werner and Smith described these children as "Resilient Children" (Werner & Smith, 1982).

At a later date, the American developmental psychologists Ann S. Masten, Karin M. Best, and Norman Garmezy proposed the definition that "Resilience refers to the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances" (Masten, Best, & Garmezy, 1990). Later, Masten published "Ordinary Magic." In this paper, she argued that resilience does not come from rare and special qualities, but from the everyday magic of ordinary, normative human resources in the minds, brains, and bodies of children, in their families and relationships, and in their communities (Masten, 2001).

Since then, various interventional studies have been conducted on resilience, and a new meaning, "skill," was added to resilience (previously, resilience was considered to be the

ability, process, or outcome of positive adaptation in times of hardship). In her book *Ordinary Magic: Resilience in Development* (Masten, 2014), Masten defines the term “resilience” as “The capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development.”

This survey used the PMK-CYRM-R scale, which was developed in Canada by the Resilience Research Centre (RRC), to measure children’s resilience. This scale comprises 17 items with two domains of “personal resilience” and “caregiver resilience.” Caregiver resilience relates to characteristics associated with the important relationships shared with either a primary caregiver or a partner or family. Personal resilience includes intrapersonal and interpersonal items.

Purpose of this Survey

This study aimed to obtain implications on childrearing and childcare practices for achieving children's well-being through analyzing factors predicting children's well-being during the COVID-19 pandemic in eight Asian countries. More precisely, we examined predictable variables of children’s well-being referring to Bronfenbrenner’s ecological systems theory, including “Mothers’ concern about the spread of COVID-19” (corresponding to Bronfenbrenner’s macrosystem), “household income” (exosystem), “friends, support from childcare facilities/schools, and family (maternal and spousal factors)” (meso- & microsystems), and “children’s daily life” and “resilience” (child factors).

Regarding the eight Asian countries, the survey was designed by selecting East and Southeast Asian countries surrounding Japan, where CRN is located. This survey aims to find the trend in Asian countries as a whole as well as common/different points through international comparison analysis, thereby pursuing appropriate solutions according to the actual situation of each country.

In addition, previous studies have been carried out on children's well-being (Tracey, Louise et al., 2022), or on children's resilience (Abigail M Stark et al., 2020) during the COVID-19 pandemic. Nevertheless, only few studies have yet focused on the relationship between these two concepts in the context of the pandemic. Therefore, this survey aims to find the relationship between children’s well-being and resilience during the pandemic.

Research Questions

1. Among children's environmental and personal factors, which factors predict their well-being during the COVID-19 pandemic?
2. How do the predictive factors of children's well-being differ in each country during the COVID-19 pandemic?

Method

Questionnaire Design and Implementation in Eight Countries

CRN developed a questionnaire in English and Japanese based on the opinions of researchers from eight Asian countries.*2 In the Philippines and Singapore, the English version was used directly. In China, Taiwan, Indonesia, Malaysia, and Thailand, each researcher translated the English version into their native language.

Survey Overview

This survey was aimed at mothers of five-year-olds (preschool children) and seven-year-olds (primary school children) in eight countries: Japan, China, the Philippines, Malaysia, Taiwan, Indonesia, Singapore, and Thailand. Mothers of 5- and 7-year-olds were selected as respondents because previous studies by Heckman (2012) and others have revealed that early childhood has a significant impact on the subsequent growth and development of children. In addition, in order to ensure consistency in the conditions for an international comparison, mothers, who are present in the lives of children and have a significant influence on their growth and development in all countries, were chosen as respondents. Furthermore, research subjects were requested to be designated as "middle class in cities and suburbs" in all eight countries since our intentions were to collect as general a trend as possible in all the countries, and to align the attributes of the research subjects in each country as much as possible on the assumption of international comparison. The survey was conducted in the form of either an

online or paper-based questionnaire between August and November 2021. This survey research was conducted with the ethical approval of the Ethics Committee of the Faculty of Human Informatics, Aichi Shukutoku University (Approval No. 2021-006). Informed consent was obtained from all participants before collecting data, providing them with information about the survey content in advance.

Valid responses were obtained from 1,973 mothers of five-year-olds (in eight countries) and 1,372 mothers of seven-year-olds (in six countries excluding China and Singapore). Table 1 below summarizes the survey period, method, number of valid responses, and children's gender data.

Table 1. *Summary of Survey Participants in Eight Countries*

Participating countries	Japan				China				The Philippines				Malaysia			
Period	Sept. – Nov. 2021				September 2021				Aug. – Sept. 2021				September 2021			
Method	Online/Paper				Online				Online				Online			
Numbers of valid responses	Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds	
	246		114		264		0		218		202		250		250	
* Gender of the child (%)	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	45.1	54.9	50.9	48.2	52.3	47.7	-	-	46.3	53.2	47.0	53.0	47.2	52.8	50.4	49.6
Participating countries	Taiwan				Indonesia				Singapore				Thailand			
Period	September 2021				September 2021				Sept. – Nov. 2021				October 2021			
Method	Paper				Online				Online/Paper				Online			
Numbers of valid responses	Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds		Mothers of 5-year-olds		Mothers of 7-year-olds	
	260		251		416		335		136		0		183		220	
* Gender of the child (%)	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	48.8	50.0	50.2	49.0	50.0	50.0	51.6	47.8	50.7	49.3	-	-	50.8	49.2	51.8	48.2

* For the question asking the gender of the child, some respondents provided no answers.

M=Male/F=Female

The collected data was entered into a common format and cleaned in bulk using the same inclusion and exclusion criteria. Specifically, when processing non-responses and unclear responses, logically contradictory answers were treated as missing values, and were excluded from the analysis. Furthermore, for questions related to whether they have a spouse/partner, whether the child is attending a childcare facility, and employment status, we provided answer options in these questions indicating the "presence or absence of a spouse," "childcare facility attendance status of the child" and "employment status," while consistency between

questions were also checked on a case-by-case basis, and data cleaning was conducted.

Dependent Variable

The dependent variable of this survey was children's well-being. This survey used the KINDL^R scale to measure children's well-being.

Reliability of Well-being Measurement

To employ the KINDL^R scale, the questionnaire published on the website of the Office of Quality of Life Measures was used for the participants in the Philippines, Singapore (English), Japan (Japanese), and Taiwan (traditional Chinese). In China, the simplified Chinese version of the questionnaire was partially modified. Since the official translations were not available for Malaysia, Indonesia, and Thailand, the researchers translated the questionnaire into their respective languages following the protocol set in the KINDL^R Manual.

In this survey, IBM SPSS Statistics (ver. 27.0) was used for data analysis. By analyzing the aggregated data of 24 items collected from the questionnaire in each country, we confirmed a reliability coefficient (Cronbach α) of 0.7 or higher for all data of five- and seven-year-olds, apart from the data of five-year-olds in Malaysia (for which the reliability coefficient was 0.60). Therefore, the KINDL^R scale (Min=60.00, Max=120.00, $M=97.41$, $SD=10.75$ for the overall data of five-year-olds in eight countries) shows acceptable internal consistency in all countries apart from Malaysia.

Independent Variables

In terms of independent variables, we created synthetic variables through the following process.

Reliability of Resilience Measurement

To employ the PMK-CYRM-R scale, the English questionnaire published on the Resilience Research Centre (RRC)'s website was used for the participants in the Philippines and Singapore. In Japan, China, Taiwan, Malaysia, Indonesia, and Thailand, the

questionnaire was translated into their respective languages by the joint researchers of the above countries and CRN members.

By analyzing the aggregated data of 17 items collected from the questionnaire in each country, we confirmed a reliability coefficient (Cronbach α) of 0.8 or higher for all data of five- and seven-year-olds. Therefore, the PMK-CYRM-R scale (Min=17.00, Max=85.00, $M=68.32$, $SD=14.43$) shows acceptable internal consistency in all eight countries.

Independent Variables Other than Resilience Measurement

We used the maximum likelihood method and promax rotation for factor analysis. For questions regarding support from childcare facilities/schools, one factor was fixed (Min=9.00, Max=20.00, $M=18.17$, $SD=2.14$). This synthetic variable consists of items such as "Caregivers/teachers care about the subject child.", "There are caregivers/teachers whom I can turn to for advice.", etc. For questions regarding the spouse's support, two factors were fixed: "Spouse's childrearing" (Min=4.00, Max=16.00, $M=13.91$, $SD=2.37$) and "Spouse's support for wives" (Min=5.00, Max=20.00, $M=16.72$, $SD=3.17$). "Spouse's childrearing" consists of the items such as "Talks with the subject child," "Teaches studying to the subject child," etc., and the factor "Spouse's support for wives" consists of response items such as "Listens my child care concerns," "Considers how to cope with COVID-19, together," etc. Finally, for questions regarding mothers' parenting attitudes, two factors were fixed: "Mother's responsive parenting attitude" (Min=7.00, Max=28.00, $M=24.86$, $SD=2.76$) and "Mother's negative parenting (reversed)" (Min=3.00, Max=12.00, $M=8.15$, $SD=1.85$). "Mother's responsive parenting attitude" consists of the items "I talk to my child in a warm and gentle manner.", "I respond to my child's needs." etc., and the factor "Mother's negative parenting attitude" consists of the items "I let my emotions get the best of me when disciplining my child.", "I hit my child when he/she doesn't listen to me.", etc. We used these fixed factors as predictors in this survey.

For questions regarding mothers' childrearing perceptions, no factor was fixed as a result of factor analysis. Therefore, each question was treated as a single item. In the previous study (Ogawa et al., 2022), two single items, "Mother's childrearing confidence" (Min=1, Max=4, $M=3.23$, $SD=.928$) and "Mother's tendency to compare with other children (reversed)" (Min=1, Max=4, $M=2.44$, $SD=1.014$) were confirmed to be associated with children's well-

being in each country. Therefore, we used these single items as predictive factors in this survey.

For the "children's daily life" factor, we created a synthetic variable of "Total hours of ICT usage at home" (Min=.00, Max=12.00, $M=3.16$, $SD=2.31$) by aggregating all answers to the questions of "TV/DVD viewing time at home," "smartphone viewing/usage time," and "tablet viewing/usage time." Similarly, we created a synthetic variable of "Total hours of indoor/outdoor playtime at home" (Min=.00, Max=8.00, $M=3.44$, $SD=2.07$) by aggregating the answers to the questions of "free time for outdoor play (excluding the time of school/enrichment classes)" and "free time for indoor play (excluding the time of school/enrichment classes)."

For the variables "Mother's concern about the spread of COVID-19 (reversed)" (Min=1, Max=5, $M=1.74$, $SD=.902$), "Household income" (Min=1, Max=3, $M=1.78$, $SD=.712$), "Number of friends to play with" (Min=.00, Max=5.00, $M=2.93$, $SD=1.54$), and "Average sleeping hours" (Min=5.50, Max=12.50, $M=9.16$, $SD=1.45$), each single item question was treated as one variable.

Results

Attributes of Survey Participants

This survey was aimed at mothers of five- and seven-year-old children. Since the data for five-year-old children were complete from all eight countries, we will discuss the analysis results of five-year-old data in this article.

As for children's attendance during the research period which was during the COVID-19 pandemic, almost all the children in Japan, China, Taiwan, and Singapore were "Attending childcare facility as usual (97.8-100%)," while children in the Philippines and Malaysia were either "Attending childcare facility as usual" or "Attending childcare facility/online classes (hybrid style)." In Indonesia and Thailand, about 50% of children were "Attending childcare facility/online classes (hybrid style)" and the remaining 50% did not attend a childcare facility.

Regarding participant mothers' occupations, most mothers in Japan, China, the Philippines, Singapore, and Thailand were in employment (76.0-95.9%). In contrast, in Malaysia, Taiwan, and Indonesia, about 50% of mothers were working (45.0-62.7%). As for their academic background, most mothers in seven countries (excluding Malaysia) had completed higher education, although the percentage of these mothers varies by country (54.6-93.6%). In Malaysia, the percentage of mothers who had completed secondary education was the highest (about 60%).

Research Question 1

Among Children's Environmental and Personal Factors, which Factors Predict their Well-being During the COVID-19 Pandemic?

In this survey, we conducted a hierarchical multi-regression analysis. First, we set children's well-being as a dependent variable. Then, we analyzed all predictive variables in the nested ecological systems in the order from the farthest to the nearest to the center (i.e., a participant child) based on Bronfenbrenner's ecological systems theory. More precisely, the variable of "Mother's concern about the spread of COVID-19" (macrosystem) was added in Model 1, the variable of "Household income" (exosystem) was added in Model 2, the variables from the factor categories of "friends, support from childcare facilities/schools, and family" (meso- & microsystems) was added in Model 3, and the variables from the factor categories of "Daily life" (child factor) was added in Model 4. Finally, the variable of "Resilience" (child factor) was added in Model 5. Table 2 below shows the analysis results using the aggregated data from eight countries.

Variables of "Mother's concern about the spread of COVID-19" (macrosystem) and "Household income" (exosystem)

Looking at Table 2, we will closely examine the analysis results from Model 1 to Model 5. The first variable of "Mother's concern about the spread of COVID-19" (macrosystem) showed significance when it was added in Model 1. Although the effect size is small, we can see that the mother's fear toward the spread of COVID-19 is associated with children's well-being. Furthermore, it remained significant when the variable of "Household income"

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Table 2. Analysis of Factors That Predict Children's Well-Being (Five-Year-Old Data Aggregated From All Eight Countries)

Nested level (Ecological systems theory)	Factor category	Variable * Synthetic variables are <u>underlined</u>	[Model 1] n=1,835 Macrosystem only		[Model 2] n=1,517 Model 1 + Exosystem		[Model 3] n=1,430 Model 2 + Microsystem		[Model 4] n=1,421 Model 3 + Child's daily life		[Model 5] n=1,410 Model 4 + Child's resilience	
			β	p	β	p	β	p	β	p	β	p
Macro-system	Society & culture	Mother's concern about the spread of COVID-19 (reversed)	.085	***	.097	***	.017		.003		-.012	
Exo-system	Parental financial status	Household income			.135	***	.059	*	.060	**	.014	
	Friends	Number of friends to play with					.057	*	.055	*	.022	
	Childcare facility/school	<u>Support from childcare facilities/schools</u>					.102	***	.099	***	.023	
		<u>Spouse's childrearing</u>					-.044		-.039		-.012	
		<u>Spouse's support for wives</u>					.094	**	.086	**	.110	***
		<u>Mother's responsive parenting attitude</u>					.100	***	.100	***	.069	**
		<u>Mother's negative parenting attitude (reversed)</u>					.180	***	.184	***	.151	***
	Family	Mother's confidence in childrearing					.366	***	.364	***	.079	**
		Mother's tendency to compare with other children (reversed)					.112	***	.101	***	.123	***
		Average sleeping hours							.014		.031	+
		<u>Total hours of ICT usage at home</u>							-.078	***	-.062	**
		<u>Total hours of indoor/outdoor play at home</u>							.091	***	.068	***
		<u>Resilience</u>									.523	***
		Adjusted coefficient of determination (adjusted R-squared)	.007		.028		.301		.312		.453	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Model 1: Variable corresponding to the Macrosystem in Bronfenbrenner's ecological systems theory set as an independent variable

Model 2: Model 1 + nested variable corresponding to the Exosystem were set as independent variables

Model 3: Model 2 + nested variables corresponding to the Meso- & Microsystem were set as independent variables

Model 4: Model 3 + nested variables corresponding to children's daily-life were set as independent variables

Model 5: Model 4 + nested variable corresponding to resilience were set as independent variables

(exosystem) was added. However, after the variables of "friends, support from childcare facilities/schools, and family" (meso- & microsystems) were added, the significance of "mother's concern about the spread of COVID-19" became negligible. This means that mothers' fear may negatively affect children's well-being, but the "friends, support from childcare facilities/schools, and family" factors (meso- & microsystems) can dispel such adverse effects.

The second variable of "Household income" (exosystem) showed a high level of significance when it was added in Model 2. It indicates that the amount of household income

is also associated with children's well-being. This significance continued until the “Resilience” variable (child factor) was added. This indicates that the household income level will not be associated with children’s well-being as long as their resilience is maintained at a reasonable level.

Variables of “friends, support from childcare facilities/schools, and family” (meso- & microsystems)

The variables of “Number of friends to play with,” “Support from childcare facilities/schools,” and “Family (spouse’s support, mother’s parenting attitude, and perceptions)” (meso- & microsystems) showed high significance when they were added in Model 3. The value of the adjusted R-squared in Model 3 is conspicuously higher than in Model 2. This means that close interactions with friends and support from teachers/family members are also vital for children’s well-being. However, after the “Resilience” variable was added, the significance of “Number of friends to play with” and “Support from Childcare facilities/schools” became negligible, while the significance of “Family” remained at a high level. Resilience may have had a mediating effect to the “Number of friends to play with” and “Support from Childcare facilities/schools”.

When looking into the family variables which were significant after the “Resilience” variable was added, the variable of “Spouse’s support for wives” remained significant up to Model 5 compared to the variable of “Spouse’s childrearing.” This indicates that children’s well-being is more positively affected by the spouse’s support for the wives than the spouse’s childrearing. It should be noted, however, that since the respondents of this survey were mothers, the results in this study are solely based on their perceptions.

Mothers’ factors including “Mother’s responsive parenting attitude,” “Mother’s negative parenting (reversed),” “Mother’s confidence in childrearing” and “Mother’s tendency to compare with other children (reversed)” remained significant until Model 5. However, after the “Resilience” variable was added in Model 5, the beta coefficient of “Mother’s confidence in childrearing,” which had shown the highest value, markedly diminished. Only the variables of “Mother’s negative parenting (reversed)” and “Mother’s tendency to compare with other children (reversed)” maintained a high level of beta coefficients. In short, all four mother-related factors significantly affect children’s well-being. In particular, considering

the continued significance of "Mother's negative parenting (reversed)" and "Mother's tendency to compare with other children (reversed)," the absence of mothers' negative parenting and not comparing with other children are effective in enhancing children's well-being.

Variable of "children's daily life" (child factor)

The variables of "Average sleeping hours," "Total hours of ICT usage at home," and "Total hours of indoor/outdoor play at home" are children's daily-life factors, which showed significance even after the "Resilience" variable was added as an independent variable in Model 5. Therefore, these daily-life factors are associated with children's well-being regardless of their resilience.

Variable of "Resilience" (child factor)

The last variable added was "child's resilience." "Child's resilience" added in Model 5 shows considerable explanatory power. This is verified by a high level of beta coefficient in "child's resilience" when incorporated in Model 5, as well as a higher adjusted R-squared value in Model 5 than in Model 4. Therefore, by analyzing the aggregated data of five-year-olds in eight Asian countries, it is confirmed that children's resilience was an integral factor that predicted their well-being during the COVID-19 pandemic.

Research Question 2

How Do Predictive Factors of Children's Well-being Differ in Each Country during the COVID-19 Pandemic?

Next, we conducted a multiple regression analysis based on country-specific data, by setting children's well-being as a dependent variable and using all the independent variables shown in Table 2. In other words, the multiple regression analysis was conducted at the level of Model 5 in Table 2 for each country. Table 3 below shows the analysis results.

Table 3. Analysis of Factors That Predict Children's Well-Being (Five-Year-Old Data by Country)

Nested level (Ecological systems theory)	Factor category	Variable * Synthetic variables are <u>underlined</u>	[Japan] n=149		[China] n=214		[The Philippines] n=204		[Malaysia] n=239		[Taiwan] n=145		[Indonesia] n=222		[Singapore] n=74		[Thailand] n=163	
			β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Macro-system	Society & culture	Mother's concern about the spread of COVID-19 (reversed)	-.016		.019		.180	**	-.002		-.093		-.015		.095		.050	
Exo-system	Parental financial status	Household income	-.055		-.031		.134	*	-.018		.109	+	-.057		.080		-.077	
Meso- & Micro-system	Friends	Number of friends to play with	.145	*	.106	*	-.007		-.146	*	.068		.068		.084		.046	
	Childcare facilities/schools	<u>Support from Childcare facilities/schools</u>	.033		.127	*	-.148	*	.016		.159	**	.038		.087		-.024	
	Family	<u>Spouse's childcare</u>	.057		-.047		-.052		-.015		-.125		.130	*	.143		.008	
		<u>Spouse's support for mother</u>	-.019		.170	**	.070		.044		.015		.061		.075		.159	+
		<u>Mother's responsive parenting attitude</u>	.241	***	.076		.022		.269	***	.087		.169	**	.043		.197	**
		<u>Mother's negative parenting (reversed)</u>	-.010		.091		.098		-.009		.049		.109	*	.142		.253	***
		Mother's confidence in childrearing	.175	**	.162	**	.038		.130	+	.208	***	.111	*	.183	*	.124	*
		Mother's tendency to compare with other children (reversed)	.168	**	.023		-.121	+	-.080		.241	***	.011		.064		.180	**
	Child	Average sleeping hours	.012		.004		.123	*	.027		.117	*	.086	+	.017		-.049	
		Daily life	<u>Total hours of ICT usage at home</u>	.027		-.110	*	.063		.005		-.084		-.050		.150		.056
<u>Total hours of indoor/outdoor play at home</u>			-.082		.075		.001		.103	+	.015		.026		-.051		.112	+
		<u>Resilience</u>	.392	***	.500	***	.494	***	.369	***	.501	***	.441	***	.519	***	.283	***
Adjusted coefficient of determination (adjusted R-squared)			.546		.536		.284		.329		.628		.557		.706		.447	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

This table shows the country specific results of multiple regression analysis conducted by using the same variables (corresponding to the Macrosystem, Exosystem, Meso- & Microsystem and variables related to children themselves in Bronfenbrenner's ecological systems theory) as Model 5 in Table 2 as independent variables.

Variables Common to All Eight Countries

Looking at Table 3, the “Resilience” variable (child factor) shows marked explanatory power in all eight countries. Therefore, children's resilience is the strongest predictor and influencer for their well-being across eight Asian countries.

In addition, mothers' factors showed marked significance among family-related variables (meso- & microsystems). For example, at least one of the variables of “Mother's responsive

parenting attitude," "Mother's negative parenting attitude (reversed)," "Mother's confidence in childrearing," or "Mother's tendency to compare with other children (reversed)" showed significance in all eight countries. In particular, three or more of these variables showed significance in Japan, Indonesia, and Thailand. Therefore, it is confirmed that mothers' factors are strongly associated with children's well-being.

Variables Common to More than One Country

Finally, we will explain variables showing significance in some of the eight Asian countries. First, the variables of "Spouse's support (either spouse's childrearing or support for wife)," "Support from childcare facilities/schools," "Number of friends to play with" (all of them are meso- & microsystems), and "Average sleeping hours" showed significance in three out of eight countries. The variables of "Spouse's childrearing" and "Spouse's support for wife" were strongly associated with children's well-being in China, Indonesia, and Thailand. Likewise, higher scores of "Support from childcare facilities/schools" in China and Taiwan, higher scores of "Number of friends to play with" in Japan and China, and higher scores of "Average sleeping hours" in the Philippines, Taiwan, and Indonesia increased the scores of children's well-being.

Next, the variables of "Household income" (exosystem) and "Total hours of indoor/outdoor play at home" (child factor) showed significance in two out of the eight countries. Likewise, higher scores of "Household income" in the Philippines and Taiwan, and higher scores of "Total hours of indoor/outdoor play at home" in China and Malaysia increased the scores of children's well-being.

Discussion

This survey was conducted to obtain implications on childrearing and childcare practices for achieving children's well-being through analyzing factors that predict children's well-being during the COVID-19 pandemic in eight Asian countries. We used the aggregated data of these eight countries as well as country-specific data for analysis.

We first confirmed that children's resilience strongly predicted their well-being during the

pandemic. The analysis results of the aggregated data indicate that “resilience” is a strong predictive factor for children’s well-being. Results based on country-specific data also showed that “resilience” is the strongest predictive factor for children’s well-being in all eight countries.

Well-being and resilience are both important psychological constructs in children. Many studies have focused on the resilience of children during COVID-19 pandemic. However, surprisingly few studies have sought the association of these constructs especially during the pandemic. We have, for the first time, identified a close relationship between well-being and resilience in Asian countries. The close association was quite ubiquitous among eight Asian countries, where culture, economic status and religion are quite variable. A noteworthy finding of this survey is that the function of children’s resilience was truly consistent with Masten’s theory (Masten, Best, & Garnezy, 1990; Masten, 2014) even under social difficulties such as the COVID-19 pandemic. Therefore, it is crucial to nurture children’s resilience for the better practice in childrearing and childcare to ensure their well-being during hardships or frightening times which might occur again in the future.

Whether this close association between resilience and well-being changed from the baseline (pre-COVID-19) status over the period of the COVID-19 era is an important question regarding the enduring nature of this association. However, previous studies had indicated this close association as a general trend, and no relevant studies showed quantitatively comparable data. So, this important issue will be left for future studies.

Another noteworthy finding is the significance of the “family” factor in predicting children’s well-being during the pandemic. We used six family-related variables in our analysis with the aggregated data of eight countries. As a result, five out of the six variables showed significance even after the strong explanatory factor of “Resilience” was added (Model 5 in Table 2). These five variables consist of the “mother” and the “spouse” factors. In addition, at least one of the four mothers’ factors showed significance in all eight countries. This result is consistent with the previous study’s findings (Kurian, Singh, & Datta, 2022), stating that “Parents’ engagement matters the most!” Our survey results emphasize the importance of mothers’ involvement towards their children, such as their responsive parenting attitude, confidence in child-rearing, and the absence of negative parenting attitude and not comparing with other children, to enhance children’s well-being in difficult times

such as the COVID-19 pandemic. Among these four maternal variables, the responsive parenting attitude and the negative parenting attitude are synthetic variables. Responsive parenting attitude consists of items such as "I talk to my child in a warm and gentle manner.", "We have physical contact.", "I respond to my child's needs.", "I provide an environment where my child can work on what he/she wants to do.", etc., and the negative parenting attitude consists of response items such as "I let my emotions get the best of me when disciplining my child.", "If my child makes a mistake, I become very critical of him/her.", "I hit my child when he/she doesn't listen to me." Instead of being harsh or hitting the child when he/she fails or does not listen to the parents, it is important to always give warm advice and encouragement and to provide an environment that suits the child's desires. This will be crucial to ensure children's well-being in times of hardship. For the "spouse" factor, it should be noted that the variable of "Spouse's support for wives" (not "Spouse's childrearing") remained significant until the last phase of analysis using the aggregated data of eight countries. This result is consistent with the previous study (Diniz, Brandão, Monteiro, & Verissimo, 2021), insisting that "Higher marital satisfaction was associated with more parental self-efficacy which in turn was associated with more child's social competence." The variable of "Spouse's support for wives" in this study is a synthetic variable consisting of items such as "Listens my child care concerns" and "Considers how to cope with COVID-19, together", etc. It was suggested that spouses being supportive to the mothers' concerns and considering how to cope with the pandemic together can contribute to children's well-being in difficult times such as the COVID-19 pandemic.

In addition, the meso- & microsystem variables of "Support from childcare facilities/schools" and "Number of friends to play with" lost significance after the "resilience" variable was added in the aggregated data. It should be noted that these meso- & microsystem factors remained significant in some countries in the country specific data. The variable of "Support from childcare facilities/schools" is a synthetic variable consisting of items such as "Caregivers/teachers care about the subject child.", "There are caregivers/teachers whom I can turn to for advice.", etc. This indicates that caregivers/teachers playing the part as advisors for the parents also increase children's well-being, in addition to the caregivers/teachers caring about the children.

The importance of children's daily life was also noteworthy in this survey. The aggregated

data showed that all daily life-related variables, namely, “Average sleeping hours,” “Total hours of ICT usage at home,” and “Total hours of indoor/outdoor play at home,” remained significant until the last analysis phase. More precisely, higher scores (longer hours) of “Average sleeping hours” and “Total hours of indoor/outdoor play at home” and lower scores (shorter hours) of “Total hours of ICT usage at home” augmented the children’s well-being scores. According to the previous study (Glynn et al., 2021) proposing that “Practice of family routines robustly predicted better child mental health,” the item of “working parent(s) have a regular play time with the children after work” was specified as one of the family routines. Nowadays, dual-income households are becoming increasingly common in many countries. Therefore, it is essential for working parents to set a routine to children’s daily life schedule, and have regular play time with children to enhance their well-being in difficult times such as the pandemic.

Finally, we will explain the limitations of this survey and future research directions. There may be a certain sampling bias, considering the small number of subject children (approximately 250 for each age group of five- and seven-year-olds), as well as the respondents being mothers only, in addition to the different tendencies of mothers’ academic background, occupation, and household income in each country. Therefore, we should take into account such latent bias in sampling when evaluating the findings of this survey. Second, this survey was conducted over a limited period. To continuously observe the impact of the pandemic on children’s well-being, a long-term follow-up study is necessary. Third, although the survey results suggested the importance of nurturing children’s resilience to enhance their well-being, we did not discuss how to nurture such resilience. This is because quantitative surveys have their limits as to covering the details. Therefore, in the future, we need to seek a practical approach to enhance children’s well-being and resilience by combining quantitative and qualitative research methodologies.

Notes

*1: Child Research Net (CRN) is an interdisciplinary institute of “Child Science” based in Japan, aiming to provide solutions for various issues confronting children. It collects and disseminates information on these issues worldwide through its website, available in Japanese, English, and Chinese.

English website: <https://www.childresearch.net/>

*2: To view the questionnaire, please access the links below.

Questionnaire for five-year-olds

https://www.childresearch.net/pdf/CRNA_survey_questionnaire_5YO_eng.pdf

Questionnaire for seven-year-olds

https://www.childresearch.net/pdf/CRNA_survey_questionnaire_7YO_eng.pdf

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