



RESEARCH ARTICLE

Developmentally Delayed Growth and Inappropriate Infants' Skills of their Behaviours and Activities in Thai Children

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ARTICLE INFO	ABSTRACT
Received: Apr 24, 2024	Creative and modified the 8-phase PRECEDE-PROCEED Model, the Developmental Surveillance and Promotion Manual (DSPM) including Gross Motor, Fine Motor, Receptive Language, Expressive Language, and Personal and Social scales. Matching pairs from the 65 inappropriate pairs' children and 65 pairs' caregivers at the 26 Rural Hospital Districts, in Khon Kean, Thailand was assessed to predisposing, enabling, and auxiliary factors were invented. The 10-item Interview Predisposing Factor Cause Form (IPFCF), the 10-item Interview Enabling Factor Cause Form (IEFCF), and the 12-item Auxiliary Factor Media Cause Form (IAFMCF) that contain the five DSPM scales into the 10-skill Developmental and Behavioral Skill Predisposing Factor (DBSPF), the 10-skill Developmental and Behavioral Skill Test on Enabling Factor (DBSTEF), and the 12-skill Developmental and Behavioral Skill Test on Auxiliary Factor (DBSTAF) instruments were associated. Most instruments are valid and reliable. The means of IPFCF, IEFCF and IAFMCF were compared and differentiated significances ($p < .05$). The grant means of caregivers' responses of their interviewees' five scales of the variables, significantly ($p < .05$). The R2 values indicate that 57%, 47%, and 51% of the variance in causes of the predisposing, enabling, and auxiliary factors related to delayed five DSPM in 9-month-old Thai children are attributable to causes' developmental growth skill factors.
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Keywords	
Monitoring and evaluations	
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Developmentally delayed	The means of IPFCF, IEFCF and IAFMCF were compared and differentiated significances ($p < .05$). The grant means of caregivers' responses of their interviewees' five scales of the variables, significantly ($p < .05$). The R2 values indicate that 57%, 47%, and 51% of the variance in causes of the predisposing, enabling, and auxiliary factors related to delayed five DSPM in 9-month-old Thai children are attributable to causes' developmental growth skill factors.
Growth skills	
Inappropriate and appropriate children's behaviours and activities	
Means are compared	
Variables are associated	
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INTRODUCTION

The United Nations Sustainable Development Goals (SDGs) set out the key areas of the development agenda regarding child health in Goal 3: Ensure that people live healthy lives and promote welfare for all at all ages by 2030 (United Nations Thailand, 2018), which is a blueprint for Thailand in formulating a 20-year national strategy (2018-2037) with a national vision or motto: A stable, prosperous, sustainable, and developed country that creates wealth focuses on developing and strengthening the potential of human resources by developing people in all dimensions and at all ages to be good, talented, and quality people. Promoting quality birth and developing people's potential throughout their lives, from pregnancy to early childhood and childhood until the elderly (National Strategy Committee, 2018). The foundation for human development from early childhood to have good physical and mental health to have brain skills, learning skills, life skills, and social skills for quality growth, which has important indicators: Early childhood develops at least 85%, appropriately for their age (Office of the National Economic and Social Development Board, Office of the Prime Minister, 2016).

Naming children according to their age

There are various definitions of the periods in a child's development, since each period is a continuum with individual differences regarding starting and ending. Some age-related development periods with defined intervals include: newborn (ages 0 – 2 months); infant (ages 3 – 11 months); toddler (ages 1 – 2 years); preschooler (ages 3 – 4 years); school-aged child (ages 5 – 12 years); teens (ages 13 – 19 years) (Sword, 2021). The early years of a child's life are a crucial time for making those connections—at least one million new neural connections (synapses) every second, far more than at any other time in life (Center on the Developing Child at Harvard University, 2020). The connections needed for many important, higher-level abilities like motivation, self-regulation, problem-solving, and communication are formed in these early years—or not formed. It's much harder for these essential brain connections to be formed later in life. Sensory pathways, like those for basic vision and hearing, are the first to develop, followed by early language skills and higher cognitive functions (Harvard University, 2021).

Statuses of infant children in Thailand

Many children in Thailand lack appropriate care and stimulation in their early years. Too few parents are engaging with their children in a meaningful, responsive, and caring way, and many practice violent discipline (UNICEF Thailand, 2021). Children gain skills in five main domains: Gross Motor (GM), Fine Motor (FM), Receptive Language (RL), Expressive Language (EL), and Personal and Social (PS). All of these areas of development interlink at every stage; children can't progress in one area without progressing in another. From birth to age 5, a child's brain develops more and more rapidly than at any other time in life. Scientific research has made it clear that the quality of a child's experiences in the first few years of life—positive or negative—helps shape how their brain develops. And that these experiences have a lasting impact on their health and ability to learn and succeed in school and life (Ministry of Public Health of Thailand, 2023).

To determine eligibility for early intervention, a child will either receive a qualifying diagnosis (such as autism) or display a 25% or greater delay in one or more of the five domains of development. Children aged 9 months are the first age group to be screened for child development by Ministry of Public Health officials. 78.4% of Thai children had appropriate development. Suspected developmental delay occurred in 21.6% of children aged 9 months in the entire country; 79.98% had appropriate development; and 19.84% were suspected of delayed development. Children aged 9 months in health had 20.43% suspected of delayed development, with the most suspected delayed development in the GM skills at 57.45%, 25.53% in FM, 23.40% in EL, 23.40% in RL, and 14.89% in PS skills (Child Health Development Institute of Ministry of the Public Health, 2022). The Ministry of Public Health (2023) has a policy to promote quality births and set developmental indicators to monitor and promote the development of children 0 - 5 years old using the DSPM manual, resulting in better early childhood development.

Creating and designing research on the causes of inappropriate behaviours developmentally delayed growth skills

Creating and designing research on the causes of developmentally delayed growth skills and inappropriate behaviours in 9-month-old Thai children was assessed with the child development assessment instruments to suit the context of Thai children, including methods for monitoring development and methods for promoting child development for parents. In the context of child development screening and promotion services in Khon Kaen Province is the operating center of the Roi-Kaen-San-Sin Group. It is divided into 26 districts, 199 sub-districts, and 2,331 villages. There are 26 CUP host hospitals (CUP: Contracting Unit for Primary Care: CUP), divided by area into 2 groups, namely: the first being CUP in the northern district with 13 CUPs, and the second group as 13 CUPs in the southern district for children aged 0 - 5 years with 96.87% of normal development and 3.13% inappropriate developmental growth skills for Thai children on five DSPM in 9-month-old Thai children were assessed and predicted.

METHOD

The PRECEDE-PROCEED Model

In this framework, health behaviour is regarded as being influenced by both individual and environmental factors and hence has two distinct parts. First is an "educational diagnosis" – PRECEDE, an acronym for **P**redisposing, **R**einforcing and **E**nabling **C**onstructs in **E**ducational **D**iagnosis and **E**valuation. Second is an "ecological diagnosis" – PROCEED, for **P**olicy, **R**egulatory, and **O**rganizational **C**onstructs in **E**ducational and **E**nvironmental **D**evelopment has provided moral for health promotion (Green & Kreuter, 2005) (see in Supplementary Material files in Tables 1-3).

The Developmental Surveillance and Promotion Manual (DSPM) 2020

The DSPM stand for using the monitoring growth and encourage children have developed appropriately. It also gives some children a chance to show their abilities that is ahead of its time in some matters (see in Supplementary Material files in Tables 4). In analyzing the causes that cause children aged 9 months to develop inappropriately, there are 3 factors that include: *Predisposing, Enabling, and Auxiliary* factors.

Research objectives

1. To create an initial attention guiding principle of the PRECEDE–PROCEED model and the developmental behavioural skill tests of the causing factors' outcomes of developmentally delayed growth skills with the DSPM on inappropriate behaviours in 9-month-old Thai children.
2. To compare the perceptions of inappropriate and appropriate children's caregivers were assessed of their inappropriate and appropriate developmental growth skills on three factors that follow as the DSPM onto the causes of the inappropriate behaviours in 9-month-old Thai children.
3. To associate the inappropriate children's caregiver's perceptions and the 3-factors of children's developmental and behavioural skill tests onto causes of the predisposing, enabling, and auxiliary factors related to the caregivers' responses to their inappropriate developmental growth skills of five DSPM in 9-month-old Thai children.

Research instruments

The Interview Predisposing Factor Cause Form (IPFCF) assessed the 65 pairs' caregivers who were the interviewees' perceptions and responses to the profession nurses on the assessing case on predisposing factors in 5 options. *The Interview Enabling Factor Cause Form (IEFCF)*, similarly to the IPFCF, the IEFCF was designed and created in the same condition as the IPFCF were assessed on five options. *The Auxiliary Factor Media Cause Form (IAFMCF)*, the 12-item IAFMCF for contributing factors that have the potential to cause inappropriate development. The U.S. Department of Health and the Human Services National Institutes of Health (2021), including three research instruments: *The Developmental and Behavioral Skill Tests on Predisposing Factor (DBSPF)*, *The Developmental and Behavioral Skill Test on Enabling Factor (DBSTEF)*, and *The Developmental and Behavioral Skill Test on Auxiliary Factor (DBSTAF)* on five options were adapted for this research study.

Sample size

The sample size consisted of 65 inappropriate children and 65 caregivers (case group) who took care of inappropriate children, 65 appropriate children and 65 caregivers (control group), similarly. Matching 65 pairs of inappropriate children and their caregivers, and 65 pairs of appropriate children and their caregivers at 9 months old were paired using the DSPM in 26 CUPS in Khon Kaen Province, Thailand. The 65 pairs of caregivers' responses of their interviewees to the GM, FM, RL, EL and PS categories were tested.

Variables

There are only two indicating factors: *Pass* and *Non-Pass* results: past and non-pass (delayed) growth skills. The IPFCF, IEFCF, and IAFMCF research instruments are the *Independent Variables*. The

DBSPF, DBSTEF, and DBSTAF instruments are the *Dependent Variables*. The developmentally delayed growth skills for inappropriate and appropriate behaviours were compared and associated with the scale means in the GM, FM, RL, EL, and PS categories.

Data Analysis

The IPFCF, IEFCF, and IAFMCF research instruments were assessed on the appropriateness to the caregivers' responses of their interviewees. The appropriate children were calculated and compared. The grant mean scores of the IPFCF, IEFCF, and IAFMCF testing skills' factors were associated with the statistics, including means, standard deviation (S.D.), internal consistency (Cronbach Alpha) reliability coefficient (α -reliability), variance, F-test, t-test, simple and multiple correlations (r and R), standardized regression weight skill (β), and determination predictive value (R^2) coefficient.

RESULTS

General data for the background of the sample size

This study was designed for the case, and the groups consisted of 65 children age 9 months and included 74 male babies and 54 female babies. Most of them are the first-sequent number of babies (48.5%). The moms' average age ranged from 20 to 35 years old (73.1%). Their educational success was under graduation (82%), maternal occupation as the agricultures, labours, or technicians (65%), maternal age ranged from 20-35 years old (80.0%), maternal conceived this child at an age 20-35 years old (76.9%), maternal education as less than undergraduate (83.0%), total family income of 7,501 to 18,000 (THB)/month (37.7%), approximately, parenting a child with the type of milk as breast milk only (53.1%), main caregiver age as 20-35 years old (50.0%), main caregiver education as undergraduate as 85%, main caregiver relationships as parents (50.8%), and parenting or caregivers having the DSPM handbook for reading to take care or look for of their children (63.1%).

Validation and reliability of the IPFCF, IEFCF and the IAFMCF

The results given in Tables 1, 2, and 3 showed that the average item means for each of the five DSPM scales contained two and three items for each scale of the IPFCF, IEFCF, and IAFMCF. These means were used as significance between the forms of the IPFCF, the IEFCF and the IAFMCF for the *Inappropriate Children* and *Appropriate Forms*. The remaining five scales are the GM, FM, RL, EL, and PS scales. There were significant correlations between caregivers' responses to their perceptions with means, standard deviation, Cronbach alpha reliability, and F-test. The summary of these values was reported in Tables 1, 2 and 3.

Table 1. Means, standard deviation, Cronbach alpha reliability, and F-test of the inappropriate and inappropriate children forms for the IPFCF

Scale	Inappropriate children form				Appropriate children form			
	Mean	S.D.	α -Reliability	F-test	Mean	S.D.	α -Reliability	F-test
Gross Motor (GM)	3.96	0.64	0.87	3.39*	3.95	0.58	0.73	4.69*
Fine Motor (FM)	4.05	0.67	0.77	3.36*	3.73	0.86	0.83	12.36*
Receptive Language (RL)	4.11	0.62	0.72	24.11*	3.72	0.99	0.77	7.46**
Expressive Language (EL)	4.18	0.68	0.83	6.58**	3.92	0.79	0.81	3.23*
Personal and Social (PS)	4.04	0.61	0.78	25.05*	3.72	0.86	0.81	3.39*
Totalized average results	4.07	1.53	0.91	7.64**	3.75	1.77	0.93	3.94**

$N = 65$ paired, $N=130$, * $p < .05$, ** $p < .01$, $p < .001$

Table 2. Means, standard deviation, Cronbach alpha reliability, and F-test of the inappropriate and appropriate children forms for the IEFCF

Scale	Inappropriate children form				Appropriate children form			
	Mean	S.D.	α -Reliability	F-test	Mean	S.D.	α -Reliability	F-test
Gross Motor (GM)	2.46	1.02	0.87	3.44*	3.00	1.07	0.76	5.63**
Fine Motor (FM)	2.22	1.03	0.85	3.57*	2.75	1.11	0.68	3.80*
Receptive Language (RL)	2.25	1.05	0.83	6.51**	2.44	1.11	0.91	8.05**
Expressive Language (EL)	2.64	1.11	0.91	3.86*	3.05	1.21	0.86	3.30*
Personal and Social (PS)	2.10	0.98	0.74	12.93**	2.32	1.13	0.88	13.56***
Totalized average results	2.33	1.77	0.93	7.11***	2.66	1.94	0.93	12.24***

*N = 65 paired, N=130, *p<.05, **p<.01, p<.001*

Table 3. Means, standard deviation, Cronbach alpha reliability, and F-test of the inappropriate and appropriate children forms for the IAFMCF

Scale	Inappropriate children form (ICF)				Appropriate children form (ACF)			
	Mean	S.D.	α -Reliability	F-test	Mean	S.D.	α -Reliability	F-test
Gross Motor (GM)	2.60	0.69	0.70	4.51*	2.60	0.63	0.62	3.17*
Fine Motor (FM)	2.64	0.74	0.67	37.48**	2.68	0.76	0.72	31.60***
Receptive Language (RL)	1.82	0.95	0.91	3.72*	2.46	0.92	0.89	4.52*
Expressive Language (EL)	3.34	0.62	0.76	3.00*	3.42	0.66	0.64	4.56*
Personal and Social (PS)	3.20	0.64	0.71	3.01*	3.31	0.75	0.82	4.39*
Totalized average results	2.70	1.73	0.76	36.04**	2.85	1.67	0.87	27.27***

*N = 65 paired, N=130, *p<.05, **p<.01, p<.001*

As reported in Table 1, the scale means ranged from 3.96 to 4.18 for inappropriate children's developmental growth skills and from 3.72 to 3.92 for the ACF. Table 2 shows similarity; the scale means ranged from 2.10 to 2.64 on the inappropriate children's developmental growth skills and 2.32 to 3.00 for the ACF. The scale means ranged from 1.82 to 3.34 for the ICF, and 2.46 to 3.42 for the ACF, as reported in Table 3, respectively.

In statistics, the standard deviation is a measure of the amount of variation of a random variable expected from the mean. In Table 1, the SD for the ICF ranged from 1.22 to 1.36 for the ACF factor, from 1.22 to 1.36 for the ACF factor, and from 1.57 to 1.99 for the factor. In Table 3, the S.D. ranged from 0.98 to 1.11 for the ICF and from 1.11 to 1.52 for the ACF. As reported in Table 3, the SD ranged from 0.99 to 1.27 for the ICF and ranged from 1.11 to 1.52 for the ACF, respectively. Cronbach's alpha is a way of assessing reliability; the α -reliability ranged from 0.72 to 0.87 and from 0.73 to 0.83, as reported in Table 1. The α -reliabilities in Tables 2 and 3 ranged from 0.74 to 0.91, from 0.76 to 0.91, from 0.70 to 0.91, and from 0.62 to 0.89 for the ICF and ACF Forms for the IEFCF and IAFMCF, respectively. These results indicate that all possible split-half reliabilities are equivalent to validity and reliability for the IPFCF, IEFCF, and IAFMCF, respectively.

To compare the caregivers' responses to their inappropriate and inappropriate children with totalized scale means for assessing developmental growth skills on three factors: predisposing, enabling, and auxiliary factors that follow as the DSPM onto the causes of the inappropriate behaviours in 9-month-old Thai children. Because of the totalized scale means for the IPFCF, IEFCF, and IAFMCF, caregivers' responses to their inappropriate and inappropriate children were compared. The t-test statistic was analyzed. The results are reported in Table 4.

Table 4. Grant scale means, standard deviation, and t-test for the IPFCF IEFCF and IAFMCF to the inappropriate and appropriate children

Scale	Appropriate children		Inappropriate children		t-test	Sig.
	Grant means	S.D.	Grant means	S.D.		
IPFCF	3.751	0.773	4.071	0.535	-2.518*	.014
IEFCF	2.660	0.943	2.334	0.886	2.284*	.026
IAFMCF	2.846	0.556	2.701	0.453	1.588	.117

*N = 65 paired, N=130, *p<.05, **p<.01, p<.001*

Table 4 reports the different grant scale means, standard deviation, and t-test, which is an inferential statistic used to determine a significant difference between appropriate and inappropriate children on three factors, namely predisposing (IPFCF), enabling (IEFCF), and auxiliary (IAFMCF) factors. The t-test determines a significant difference in the IPFCF (negative result) and the IEFCF of the appropriate and inappropriate children ($p<.05$). However, the t-test is not differentiated significantly; it may be related to the IAFMCF.

Validity and Reliability of the DBSPF, DBSTEF and DBSTAF

Using average scale means, standard deviation, variance, internal consistency (Cronbach alpha reliability) coefficient, and F-test for the dependent variables, which include the DBSPF, DBSTEF, and DBSTAF, The summary results are reported in Table 5.

Table 5. Scale means, standard deviation, variance, internal consistency (Cronbach alpha reliability) coefficient, and F-test for the DBSPF, DBSTEF and DBSTAF.

Dependent variable	Scale mean	Standard deviation	Variance	Grant means	α -Reliability	F-test
DBSPF	42.23	5.59	31.23	4.23	0.91	5.88***
DBSTEF	22.67	7.16	51.26	2.23	0.89	5.96***
DBSTAF	33.75	5.66	32.04	2.82	0.74	33.76***

*N=65, *p<05, **p<01, ***p<.001*

In table 5, we focused on the statistical significance of the internal consistency (Cronbach alpha reliability) coefficient (α -reliability) and F-test, which ranged from 0.74 to 0.91. The range of reliability and its coefficient of Cronbach's alphas are acceptable (0.74), good (0.89), and excellent (0.91) reliability levels. F-tests are significant at .001. These three research instruments are valid and reliable significantly.

Association between two variables' means is usually measured by correlation for two continuous variables

Association between two variables' means is usually measured by correlation for two continuous variables and by cross-tabulation with the simple correlation (r), standardized regression weight skill coefficient (β), multiple correlations (R), and determination predictive coefficient value (R^2) for two categorical variables. The independent variables contain the five scales of the GM, FM, RL, EL, and PS scales of the ICF, and the dependent variable is the totalized interview test of the ACF for the IPFCF, IEFCF, and IAFMCF, which assessed the inappropriate children's developmental skill factors as reported in Tables 6, 7, and 8.

Table 6. Simple correlation (r), standardized regression weight skill coefficient (β), multiple correlations (R), and determination predictive coefficient value (R^2) on five scale means for the IPFCF

Scale	Mean	S.D.	Simple correlation (r)	Standardized Regression Weight Skill
Gross Motor (GM)	3.961	0.645	0.603***	0.426***
Fine Motor (FM)	4.054	0.673	0.741***	0.355**
Receptive Language (R)	4.102	0.623	0.672***	0.462***
Expressive Language (EL)	4.159	0.688	0.416**	0.329*
Personal and Social (PS)	3.046	0.611	0.619***	0.395**
Grant means testing skills	4.226	0.733		

Multiple correlations	0.7578**
Determination Predictive Coefficient (R ²)	0.5743**

*N = 65 paired, N=130, *p<.05, **p<.01, ***p<.001*

Table 7. Simple correlation (r), standardized regression weight skill coefficient (β), multiple correlations (R), and determination predictive coefficient value (R²) on five scale means of the inappropriate children's developmental skills and a scale mean of the appropriate children's developmental skills for the IEFCE

Scale	Mean	S.D.	Simple correlation (r)	Standardized Regression Weight Skill Coefficient (β)
Gross Motor (GM)	2.462	1.017	0.657***	0.397**
Fine Motor (FM)	2.223	1.035	0.640***	0.229*
Receptive Language (RL)	2.246	1.050	0.620***	0.232*
Expressive Language (EL)	2.639	1.109	0.452**	0.395**
Personal and Social (PS)	2.100	0.989	0.692***	0.280*
Grant means testing skills	2.266	0.715		
Multiple correlations			0.6831*	
Determination Predictive Coefficient (R ²)			0.4667*	

*N = 65 paired, N=130, *p<.05, **p<.01, ***p<.001*

Table 8. Simple correlation (r), standardized regression weight skill coefficient (β), multiple correlations (R), and determination predictive coefficient value (R²) on five scale means of the inappropriate children's developmental skills and a scale mean of the appropriate children's developmental skills for the IEFCE

Scale	Mean	S.D.	Simple correlation (r)	Standardized Regression Weight Skill Coefficient (β)
Gross Motor (GM)	2.620	0.690	0.519***	0.267*
Fine Motor (FM)	2.636	0.738	0.610***	0.224*
Receptive Language (RL)	1.815	0.946	0.338*	0.190*
Expressive Language (EL)	3.338	0.619	0.529***	0.451***
Personal and Social (PS)	3.260	0.636	0.612***	0.356**
Appropriate children skill	2.815	0.477		
Multiple correlations			0.7114**	
Determination Predictive Coefficient (R ²)			0.5061**	

*N = 65 paired, N=130, *p<.05, **p<.01, ***p<.001*

The simple correlation values (r), show significant correlations ($p<0.05$) between caregivers (interviewees) who responded to three factors on five scales: GM, FM, RL, EL, and PS scales on the predisposing, enabling, and auxiliary factors of children's developmental and behavioural skill tests significantly ($p<0.05$), which follow as the DSPM behavioural skill tests (DBSPF, DBSTEF, and DBSTAF) are correlated with the standardized regression weight skill. The second type of analysis consisted of the more conservative standardized regression coefficient (β), which measures the association when the effect of relationships between the scales is controlled. The multiple correlations (R) are significant for the IPFCF, IEFCE, and IAFMC forms and show that when the scales are considered together, there are significant ($p<0.05$) associations with the DBSPF, DBSTEF, and DBSTAF, respectively. The R² values indicate that 57%, 47%, and 51% of the variance in causes of the predisposing, enabling, and auxiliary factors related to the caregivers of their inappropriate developmental growth skills to be delayed of five DSPM in 9-month-old Thai children are attributable causes' developmental growth skill factors of the inappropriate children to be delayed of their Non-Pass on five developmental behaviour domains.

DISCUSSIONS

The case and control groups were paired one by one, and 26 CUPs were forms according to the principle of the matched case-control group for matching pairs. For each group of supervised 9-month-old children with inappropriate and appropriate development from the DSPM screening,

development from the DSPM by matching with the same sex was compared. Six research instruments are invented from the *Developmental Surveillance and Promotion Manual* (DSPM) on five scales: Gross Motor (GM), Fine Motor (FM), Receptive Language (RL), Expressive Language (EL), Personal and Social (PS) developmental skills and behaviours were tested and interviewed. Creative 8-phases PRECEDE-PROCEED model (Green & Kreuter, 2005) guided the *Interview Predisposing Factor Cause Form* (IPFCF), *The Interview Enabling Factor Cause Form* (IEFCF), and the *Auxiliary Factor Media Cause Form* (IAFMCF) on five scales as the independent variables. The grant means scales of the *Predisposing Factor* (DBSPF), the *Developmental and Behavioral Skill Test on Enabling Factor* (DBSTEF), and the *Developmental and Behavioral Skill Test on Auxiliary Factor* (DBSTAF) is dependent variables. As a whole, all five scales of the six research instruments are valid and reliable for this research study. The scale means of the inappropriate and appropriate children's developmental skills and behaviours for the IPFCF, IEFCF, and IAFMCF are compared. The five scale means of the IPFCF, IEFCF, and IAFMCF and the grant means of the DBSPF, DBSTEF, and DBSTAF are associated.

The summary of the results found that the five-scale means such as GM, FM, RL, EL, and PS developmental skills and behaviours for the inappropriate children's developmental skills and behaviours are higher than the appropriate children's developmental skills and behaviours on all five scales for the predisposing factor cause. This means the predisposing factors include biological factors that may influence the likelihood that an individual needs a health service, social structure that may influence how an individual can cope with health problems, and health beliefs that may influence an individual's perception of their need for a health service, which is consistent with the research results of Lo & Fulda (2008); Racine, Rebecca, Riddell, et al. (2016); Cho, Porras, Baik, et al. (2018). This result indicates that confession or belief is an important fundamental factor in determining health care guidelines, including: Morale is at the center of life. Foods are important to health; a sacred spell to protect against bad things; parents are staying in the fire brings good health; and the placenta is a blood relationship. Mothers' model of child health care is holistic, covering physical, mental, social, and spiritual aspects (Sinthusirir, Sawatdichotte, Hemathulin, et al. (2021).

In terms of the enabling and auxiliary factors of the scoring means of inappropriate behaviours and developmental skills in 9-month-old children are less than the means of appropriate children. We said that an appropriate child grows up surrounded by external influences that impact growth and development in complex ways. Environmental factors include climate, cognitive stimulation, diet, friends, housing conditions; infections, pollution, and stress are supported cause factors. Growth and development may seem like synonyms in most contexts, but they have very different meanings when discussing childhood (Balasundaram & Avulakunta, 2023). We hope that parents or caregivers learn more about the three main factors that affect the child's development: brain development, child's temperament, care they receive from you and others.

However, the enabling and auxiliary factors, the scoring means of inappropriate behaviours and developmental skills in 9-month-old children are less than the means of appropriate children. We said that the appropriate children have grown up surrounded by external influences that impact growth and development in complex ways. Environmental factors include climate, cognitive stimulation, diet, friends, housing conditions and infections, pollution, and stress are supporting causes. Growth and development may seem like synonyms in most contexts, but they have very different meanings when discussing childhood. We hope that parents or caregivers learn more about the three main factors that affect the child's development: brain development, the child's temperament, and the care they receive from you and others.

The main topic of this research study focused on the R-squared (R^2) is a statistical measure that represents the proportion of the variance for a dependent variable (developmental and behaviours skills) that's explained by an independent variable (five DSPN scales) in a regression model in three causing factors to develop growth skills onto inappropriate behaviours and skills in age 9-month-old Thai children are delayed. The results of the R^2 values indicate that 57%, 47%, and 51% of the variance in causes of the predisposing, enabling, and auxiliary factors related to delayed five DSPM in 9-month-old Thai children are attributable to causes' developmental growth skill factors of their

Non-Pass on five developmental behaviour domains to support a child development by talking and listening, singing, reading, playing together and encouraging movement.

CONCLUSION

Creative and modified the quantitative research method to be invented the research instruments from the ideas of the eight phases of the PRECEDE-PROCEED Model from Green & Kreuter, (2005) was guided to rerate the Developmental Surveillance and Promotion Manual (DSPM) (2020) on five scales, namely Gross Motor (GM), Fine Motor (FM), Receptive Language (RL), Expressive Language (EL), Personal and Social (PS) for assessing causes of developmentally delayed growth skills onto inappropriate behaviours in age 9-month-old Thai children on three causing factors, such as predisposing, enabling and auxiliary factors were interviewed into three research instruments: The 10-item *Interview Predisposing Factor Cause Form* (IPFCF), The 10-item *Interview Enabling Factor Cause Form* (IEFCF) on five options, and the 12-item *Auxiliary Factor Media Cause Form* (IAFMCF) on four options those creation followed as the DSPM and the PRECEDE-PROCEED Model to 65 caregivers who were interviewees and looked for 65 inappropriate children, and 65 caregivers who were interviewees and looked for 65 appropriate children were matching pairs. Most of the 130 caregivers were interviewed by the research group and 65 inappropriate and appropriate children were tested on five developmental growth skills by the professional nurses at the 26 Hospital Cups in the Rural Hospital, the Child Development Center, and the Child Health Care Sections in Khon Kaen Province, Thailand.

Adapted version of the *Developmental and Behavioral Skill Tests* from the U.S. Department of Health and Human Services National Institutes of Health (2021) into the grant means of the 10-skill *Developmental and Behavioral Skill Predisposing Factor* (DBSPF), the 10-skill *Developmental and Behavioral Skill Test on Enabling Factor* (DBSTEF), and 12-skill *Developmental and Behavioral Skill Test on Auxiliary Factor* (DBSTAF) instruments were tested. The five scales are the GM, FM, RL, EL, and PS that were contained in the IPFCF, IEFCF and IAFMCF research instruments are valid and reliable with α -reliability and F-test. The average means scores were compared and differentiated significances using the t-test was analyzed ($p < .05$). The DBSPF, DBSTEF, and DBSTAF developmental and behavioral skill tests are valid and reliable, significantly. The grant scale means were compared and non significant, differently on the DBSTAF scale.

Comparisons between interviewees' responses of their inappropriate and appropriate children's caregivers of the assessment developmental growth skills of their inappropriate and appropriate developmental growth skills on three factors: predisposing, enabling, and auxiliary factors that follow as the DSPM onto the causes of the inappropriate behaviours in 9-month-old Thai children. Statistically significant with the grant scale means, standard deviation, and t-test, which is an inferential statistic used to determine a significant difference between the grant means of appropriate and inappropriate children on three factors, namely predisposing (IPFCF), enabling (IEFCF), and auxiliary (IAFMCF) factors. The t-test determines a significant difference in the IPFCF (negative result) and the IEFCF of the appropriate and inappropriate children ($p < .05$). However, the t-test is not differentiated significantly; it may be related to the IAFMCF.

Associations between the inappropriate children's caregiver's responses were interviewed and the 3-factors of children's developmental and behavioural skill tests onto causes of the predisposing, enabling, and auxiliary factors related to the caregivers' responses to their inappropriate developmental growth skills of five DSPM in 9-month-old Thai children. The simple correlation values (r), which show significant correlations ($p < 0.05$) between caregivers (interviewees) who responded to three factors on five scales: GM, FM, RL, EL, and PS scales on the predisposing, enabling, and auxiliary factors of children's developmental and behavioural skill tests significantly ($p < .05$) which follow as the DSPM behavioral skill tests (DBSPF, DBSTEF, and DBSTAF) are correlated. The standardized regression weight skill that was the second type of analysis consisted of the more conservative standardized regression coefficient (β) which measures the association when the effect of relationships between the scales is controlled. The multiple correlations (R) are significant for the IPFCF, IEFCF and IAFMC Forms and show that three factors when the scales are considered together

there significant ($p < 0.05$) associations with the DBSPF, DBSTEF, and DBSTAF, respectively. The R^2 values indicate that 57%, 47%, and 51% of the variance in causes of the predisposing, enabling, and auxiliary factors related to delayed five DSPM in 9-month-old Thai children are attributable to causes' developmental growth skill factors of their Non-Pass on five developmental behaviour domains.

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