



Assessment of Parent's Anxiety within Safety of Children: Primary schools in the upper southern part of Thailand

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Abstract

The objectives of this paper are to investigate the parental anxiety within the safety of children travel to school and examine the student's self-help abilities. The 1,105 questionnaires were sent to caretakers through pupils. The results indicated that their worries at the high level mainly about the school setting, traffic volume, weather, security management, and facilities. Additionally, these worries are different from socio-economics, family's characteristic and physical environment. Furthermore, the gender, family incomes and grade of students cause a greater level of safety concern. Finally, the needs to improve the school are (1) Traffic management, (2) Safety Zone and (3) Facilities.

Keywords: Anxiety; Safety; Parent; Children; Kindergarten.

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1.0 Introduction

1.1 Aim and Objectives

Safety is also a second-tier need in Maslow's Pyramid of Needs (Maslow, 1945). Children develop a sense of security from the care of parents in the family in a safe environment with support provided by the people around them. A child's sense of security is formed during the early stages of life, and that safety is detected from the perception of danger and threats in real-life environments. (Bowby, 1988 and Erikson, 1994). Childhood is an important age in which safety requires primary consideration. As children reach four years of age, they enter the education system from kindergarten to elementary school. The missing person statistics in Thailand (2003-2015) have shown that as many as one to three people are reported missing daily with children aged 11-15 years making up the most frequently missing group. Furthermore, the age at which children are most commonly kidnapped is four years. Most young child victims are murdered. When the top three locations from which children go missing were considered, around the neighborhoods, around school zone, and the community temples are found to be the most common risk areas. Therefore, a child's travel behavior is initially dependent on the travel behaviors of parents.

Anxiety refers to "an abnormal and overwhelming sense of apprehension and fear often marked by physiological, by doubt concerning the reality and nature of the threat, and by self-doubt about one's capacity to cope with it" (Herdman, 2011). Anxiety has the similar meaning to 'concern' and 'worry', which are found in many previous research studies. Anxiety is stimulated by dangerous environments and personal factors accumulated from personal experiences of each individual. Anxiety occurring during childhood can increase as time goes by (Bosquet & Egeland, 2006) and develop into a future-oriented mood state. Thus, it is essential to avoid factors causing this kind of emotional state (Barlow, 2004). There are two causes of anxiety, including intrinsic factors (Spence, 1998) and perceptions of environmental danger.

Parental anxiety over children's safety at home and school can be caused by 1) road traffic safety from home to the school, 2) accidents occurring inside and outside the school, 3) stranger danger (Valentine, 1996), 4) pollution and toxins (Cummins & Jackson,

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2001 and Spencer & Woolley, 2000), and 5) lost and missing children incidents (Carver et al., 2005) and (Panter, Jones, & Sluijs, 2008). An increasing number of risks in the environment are the reason why children must be carefully taken care of (Collins & Kearns, 2001 and Tandy, 1999).

Self-help ability refers to being independent in doing things with stable emotion and responsibility (Thorpe, Clark, & Tieg, 1953). Children's self-reliance depends mainly on the relationship between children and their parents. If the children are raised by the authoritarian parents, who are strict, unbending, and inflexible, or the permissive parents, who are always indulgent, they will lack responsibility and be unable to rely on themselves. On the other hand, if the children are taught about self-esteem and logical decision-making, they will gradually learn about responsibility and ultimately achieve self-reliance (Conger, Kagan & Mussen, 1969). This research aimed to study children's self-reliance at the individual level.

Thailand's serious traffic hazards, inappropriate school environment, and statistics of missing children make parents express their anxiety through child pick-up and drop-off behaviours such as driving into the school and dropping their children off at the classroom door instead of a child drop-off area, which can cause even more harm to the children. The research study about pedestrian and traffic environment improvement conducted in California indicates that the environmentally improved area tends to significantly affect parents' and students' trust in school pedestrian safety (Boarnet et al., 2005). Once parents and students feel safe, the good behavioural changes occur. Examining the causes and the levels of anxiety that the parents experience will be beneficial to designing and planning effective school physical improvement. This topic has not been seriously studied and there is still a lack of awareness of the problems. In addition, the previous studies were carried out in the foreign countries with different contexts so the results cannot be used to clearly explain the situations in Thailand. Thus, this present research aimed to 1) examine the levels of parental anxiety on child pick-up and drop-off, 2) to study the self-help ability to travel to school of students from the parental perceptions, and 3) to investigate the needs of parents for school environmental improvement in order to reduce parental anxiety.

1.2 Literature review

Many of studies conducted internationally in Europe, America, and Australia has given attention to parental perceptions about safety in children concerning various aspects and the use of public transportation from homes to public locations (Carver et al., 2005). Many city planning and engineering studies on travel have reported that combined use of land and facilities for foot and bicycle travel in walk-friendly districts have lowered the worry of safety in children (Kerr, 2006). Besides, environmental improvements have influenced improved confidence in parents and children regarding walking to school with statistical significance (Boarnet et al., 2005). At the same time, Moore mentioned a group study entitled "EBC" that demonstrated the correlations between physical environment, behavior and socio-cultural aspects, constructed evaluation forms for various environmental factors for children and ordered scores (Moore, 2003). Finally, the review of relevant literature can be summarized as follows Table 1.

Table 1. Summary of related research

| Author | Title | Physical Environment | Travel Behavior | Family lifestyle | Safety concern | Independent ability |
|-------------------|---|----------------------|-----------------|------------------|----------------|---------------------|
| Hidayati, 2012 | The Impact of School Safety Zone and Roadside Activities on Speed Behaviour: the Indonesian Case | • | • | | • | |
| Zakaria, 2015 | Comfort of Walking in the City Center of Kuala Lumpur. | • | • | | • | • |
| Azhari, 2016 | Flexible Schools? A Review of School Design in Scotland. | • | | | | |
| Vanwollegem, 2014 | Feasibility and effectiveness of drop-off spots to promote walking to school | • | • | • | • | |
| Pooley, 2010 | Understanding the school journey: integrating data on travel and environment | • | • | • | | • |
| Zahrah, 2016 | People and Urban Space in Medan: An environment behaviour approach. | • | • | | | |
| Hashim, 2016 | Transformed Pedagogical Environment: Humanoids for social skilling of mentally challenged children. | • | • | | | |
| Lang, 2011 | Understanding model choice for the trip to school | • | • | | • | • |
| Mainal, 2016 | Household Behavior towards Debt in a Challenging Financial Environment: Malaysian evidence. | | | • | | |
| Etmnani, 2015 | Modeling travel behavior by the structural relationships between lifestyle, built environment and non-working trips | • | • | | • | • |
| Moore, 2004 | Environment, behaviour and society: A brief look at the field and some current EBS research at the University of Sydney | • | • | • | • | • |
| Tseng, 2016 | The Health Benefits of Children by Different Natural Landscape Contacting Level. | • | • | | | |
| Omar, 2016 | Walkability Design for Urban Public Housing Park | • | • | • | | |
| Hashim, 2016 | Family Environment, Sibling Relationship and Rivalry towards Quality of Life. | | | • | | |

| Author | Title | Physical Environment | Travel Behavior | Family lifestyle | Safety concern | Independent ability |
|------------------|--|----------------------|-----------------|------------------|----------------|---------------------|
| McDonald, 2011 | Reliability and validity of the safe routes to school parent and student surveys | • | • | • | | • |
| McMillan, 2007 | The relative influence of urban form on a child's travel mode to school | • | • | • | • | |
| Egercioglu, 2016 | Resident's Satisfaction to Evaluate Residential Environment before Urban Regeneration: Kizilay Neighborhood, Izmir. | • | • | | | |
| Cubukcu, 2016 | Physical Environmental Quality and Urban Design Education in Palestine and Turkey. | • | • | | | |
| Çubukçu, 2016 | Indicators of Quality of Life to Compare Neighborhood Units and Regional Areas: A model to collect data in Turkish cities. | • | • | • | • | |

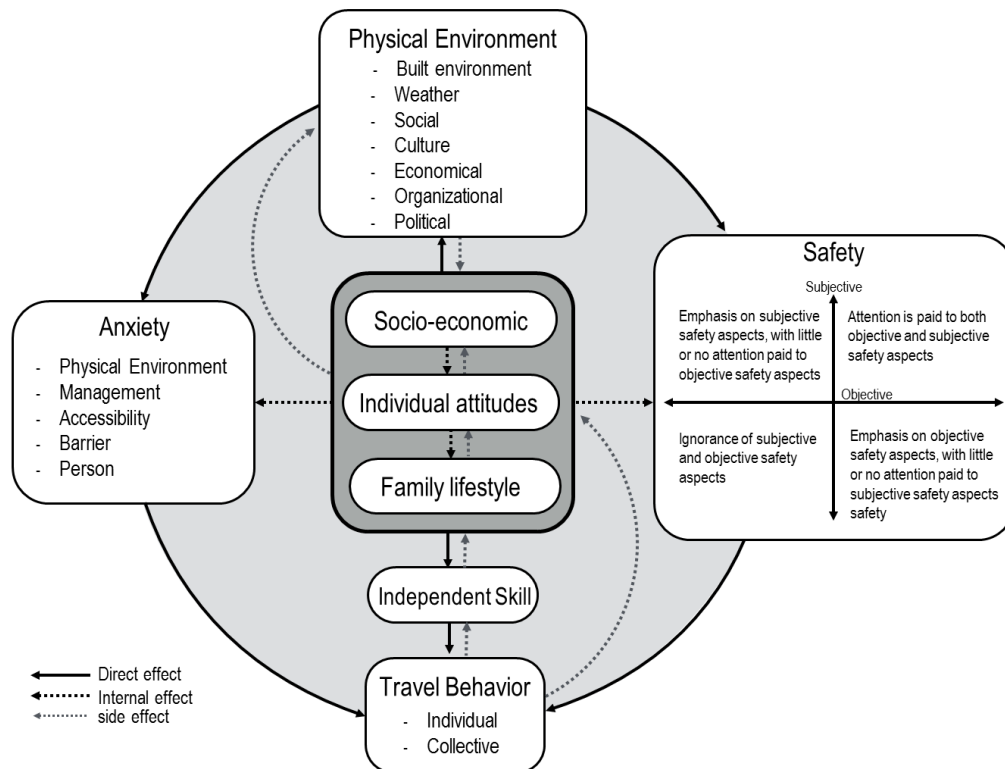


Fig. 1: The relationship between variables in the study: adapted from (1) Ghasrodashti, 2015 (2) McLaren, 2005 and (3) Nilsen, 2004.

This diagram shows the relationship between relevant factors of the research. Socio-economic, individual attitude, and family lifestyle are family characteristics inherent in each individual that are difficult to modify and considered an internal effect. When parents perceive all aspects of school environment, the perception can cause different levels of anxiety and safety depending on individual's environment and attitude. Anxiety, safety, and perception of self-help ability of students will directly affect travelling to school and child pick-up and drop-off behaviours. On the other hand, these behaviours can reflect the relevant factors as well (Figure 1). The following four variables significantly affect travel behaviors (1) socioeconomic characteristics and different family cultures, including social characteristics, family culture and general culture (McLaren & Hawe, 2005); (2) individual attitudes; (3) lifestyles and (4) built environment. The environmental determinants of active travel in youth summarized the characteristics influencing parental safety concern as the following six travel obstacles and behavioral reasons (1) personal and road safety; (2) social interactions between students, teachers, and parents; (3) facilities to assist active travel; (4) urban form and street design; (5) general aesthetics and (6) weather (Panter, Jones, & Sluijs, 2008). At the same time, a study by Schlossberg M found weather to be a key variable in types of student travel (Schlossberg et al., 2006) and sought for the government to offer convenience in response to the travel needs of students during weather conditions that hinder walking and bicycle use (Müller, Tscharaktschiew, & Haase, 2008).

2.0 Research Methodology

2.1 Research Methods

1. The survey research on parental anxiety about safety in student pickup-dropoff, student's self-help abilities and the need for school ground improvements used questionnaires to collect opinions from parents at three pioneer schools in three provinces in the upper southern region. The schools were located in urban districts as part of the walk and bike friendly city project, particularly, Anuban Ranong School, Anuban Phangnga School and The One Municipal School of Chumphon in the walk and bike friendly city project.

2. Physical surveys were conducted on the physical characteristics of the schools and communities approximately the school zones-traffic inside and outside of schools, walkways, student pick-up and drop-off areas, school gates, fences, building layouts, obstructions, blind places, risk areas, traffic signs and school management, in order to understand the problems, barriers and limitations of each location to support questionnaire construction.



Fig. 2: A physical survey of schools.

3. Stakeholders meeting was carried out with 3 groups of stakeholders including the director and teachers, the local administrative organizations, and the surrounding communities so as to identify the problems and develop the questionnaire before conducting a survey research under the "walk and bike friendly" project in 5 upper-southern provinces with MOU on 5-year school safety improvement.



Fig. 3: Stakeholders Meeting.

2.2 Populations and Samples

The population of the study consisted of 319 sets of parents and kindergarten students and 786 sets of parents and primary school students in Grades 1-6 on Probability Proportion. Simple random sampling selected by class teachers on the class numbers of students. In total, 1,105 questionnaires were delivered to the students in each grade, who were directed to inform the parents in their class to give the parents a period of one week for completing and returning the questionnaires within the first semester of the 2013 Academic Year.

2.3 Research Tool and Data Analysis

The questionnaires consisted of the following five parts: (1) demographic data on each family aimed at building understanding about social status; (2) student's travel behavior to provide understanding about expressed behaviors, problems, and limitations for each family; (3) opinions about student's self-help abilities in traveling to-from schools were discussed using basic statistics such as frequency, percentage, and standard deviation; (4) parental worry in student pick-up and drop-off consisting of five factors, specifically, external school physical characteristics, internal school physical characteristics, area administration, personal stress and weather conditions and (5) needs on school ground improvements for prioritizing each issue. Likert's 5-level scales were used in Parts four and five for each assessment (Likert, 1961). The data analyses were discussed using basic statistics such as frequency, percentage, and standard deviation. The levels of parental anxiety were examined and prioritized assessment. The anxiety and the self-help ability in the physical, social, cultural, and behavioural contexts, which were varied based on the regional differences were compared using mean, T-test, and ANOVA were used to compare the perception differences of each variable together with the physical data analysis from field study.

3.0 Research Results

3.1 Physical Analysis

There were four critical issues in the physical survey; 1) lack of sidewalk connection with parking area; 2) unsafe physical characteristics of internal and external school zone 3) Lack of school safety managements such as security guards 4) Lack of facilities that enhance student safety.

3.2 Demographic Data of Questionnaire Respondents

All of the 1,105 parent-student sample sets were from three schools in three provinces, namely, Anuban Ranong School, Anuban Phangnga School and The One Municipal School in Chumphon, under the walk-bike friendly city project in the upper southern region while presented in Table 2.

Table 2. Families characteristics and sample demographics.

| Variables | percent | Variables | percent | |
|----------------|-------------------|-----------|----------------------------|-------|
| gender | male | 28.9 | kindergarten | 28.8 |
| | female | 71.1* | primary | 71.2* |
| | total | 100 | total | 100 |
| monthly income | < 142 USD | 4.9 | kindergarten | 28.9* |
| | 142.1 – 285 USD | 24.8* | primary school grade 1 - 2 | 20.8 |
| | 285.1 – 428 USD | 24.8* | primary school grade 3 - 4 | 17.2 |
| | 428.1 – 857 USD | 22.1 | primary school grade 5 - 6 | 33.1 |
| | 857.1 – 1,428 USD | 15.8 | total | 100 |
| | > 1,428 USD | 7.8 | | |
| total | 100 | | | |
| marital status | single | 6.7 | Anuban Ranong School | 38.0* |
| | married | 76.6* | Anuban Phangnga School | 35.9 |
| | divorced | 16.6 | The One Municipal School | 26.1 |
| | total | 100 | total | 100 |

* = mode

According to Table 2, the majority of the respondents were female (71.1%) and most of them were the mother. Considering the families that the parents did not pick up and drop off their children by themselves, it was found that the grandmother mostly took charge of this duty. Furthermore, most of the subjects were married (76.6%) with monthly income at 5,000-10,000 and 10,001-15,000 baht in equal proportions (24.8%), through indicating that the population was middle class. Also, the majority of households (63.7%) had three to four members. The respondents were divided into kindergarten student parents (28.9%) with making up the majority and primary student parents in Grades 1-6 (71.1%).

3.3 Children's Travel Behavior

The study surveyed the student pick-up and drop-off behaviors of parents on distance from home to school, time pick-up and drop-off area and correlated responses such as parking at the school gate or drop-off to class while presented in Table 3.

According to Table 3 on student pick-up and drop-off behaviors of parents and children's travel behavior, the mean distance from home to school did not exceed ten kilometers, the majority of parents delivered students no later than 7:00 am on average and picked up students no later than 4:00 pm on normal.

Moreover, motorcycles and personal vehicles were most frequently used. The majority of the sample group (70%) picked up and delivered students personally. Up to 20.3 percent of parents did not pickup-deliver students personally and explained that they were running errands. The mainly of parents were farmers in the upper southern region who had to tap rubber from 1:00 am to 8:00 am, a time when the students would have to travel to school.

The study found that parents more concerned to pick students up in the evening over delivering students in the morning that to be correlated with the ways of pick-up and drop-off. A cause of Parents would deliver students at the school gates in the mornings due to rush hour and heavy traffic. Then they would park vehicles and walk to pick students up in the evening because the parents wanted greater safety during pickups than deliveries. Also, clearly indicated pick-up and drop-off locations were used, through meaning parental safety concern in student pick-up and drop-off while presented in Table 3.

The two most frequently preferred student pick-up and drop-off places be appointed locations inside the school and school gates. The areas mentioned above require safety improvements to meet the needs of students and parents. For example, Anuban Ranong School used the food court as the student pick-up and drop-off position due to its openness, absence of blind places and roof to provide shade cover where students could safely wait for parents to pick them up while presented in Table 3.

Table 3. Children's Travel Behavior and Parental Pick-up and Drop-off Behavior

| Variables | percent | Variables | mean | |
|---|---|-----------|---|----------|
| Who are pick-up drop-off the student | parent | 70.0* | The distance from home to school | 9.74 km. |
| | relation | 20.3 | The average time to send their children | 6.50 |
| | other | 9.7 | The average time to pick-up their children | 15.55 |
| | total | 100 | | |
| The reason for parents does not pick up deliver students personality. | Parent do not stay with children | 1.8 | Variables | percent |
| | Has a mission to do | 68* | Classroom | 14.1 |
| | Too far distance | 22.2 | School gate | 34.6 |
| | Students are traveling themselves. | 4.7 | appointment | 34.9* |
| | other | 3.3 | outside the school | 9.1 |
| | total | 100 | other | 7.4 |
| Way to sending their student | Driving into school | 7.2 | total | 100 |
| | Send at the school gate | 47.5* | Driving into school | 9.5 |
| | Park and walk to deliver | 35.4 | Send at the school gate | 32.5 |
| | Students are traveling to school by themselves. | 5.0 | Park and walk to deliver | 50.3* |
| | other | 3.0 | Students are traveling to school by themselves. | 4.3 |
| | total | 100 | other | 3.4 |
| Type of vehicle | walk | 2.1 | total | 100 |
| | bicycle | 1.3 | | |
| | motorcycle | 37.1* | | |
| | car | 36.7 | | |
| | Public Transport | 3.6 | | |
| | School bus | 16.7 | | |
| | Other | 2.6 | | |
| | total | 100 | | |
| | | | | |

* = mode

3.4 Parental Anxiety within Safety

Overall parental anxiety ranged from moderate to high at 3.50 from the five-level scale. A factor that causes high worry in parents is the external school physical characteristics (3.72). The portion that caused the greatest parental anxiety was dangers from accidents and heavy traffic around the school (4.19), followed by weather, school management policy, and private school physical characteristics, respectively. Besides, it is evident that weather is a significant factor that should be taken into consideration for school improvements while presented in Table 4.

When comparing parental safety concern between male and female parents, difference addition was found between concerns about child disappearance and weather with statistical significance at < .01. Furthermore, stress on vehicle speeds and road width around school areas differed with statistical significance at .05. Female parents were anxious only concerning the three factors mentioned above in pick-up and drop-off due to the worry in women about inadequate safety in physical characteristics and society.

On comparing safety concern between kindergartens and primaries, the first three stress factors were the same. However, kindergarten parents had worry about the weather because small children easily become sick due to staying out in the rain and are ruled to safety concerns including strangers because kindergarten students are unable to take care of themselves with risks for getting lost or going missing. In addition, the kindergarten parents had worry about school building safety because not all school spaces are designed for young children, which could create hazards during usage.

Meanwhile, the parents of primary students had attention about walkway barriers such as shops and snack stands and complicated school traffic because the primary school students could walk outside to buy snacks or meet at appointed pick-up and drop-off positions, how creating risks for the accident with vehicles around the school. (Table 5)

Table 4. Parental Anxiety within Safety

| Factor | Sub-factor | Mean (1 -5) | Priority | Mean | Kindergarten | | Primary | |
|--------|--|-------------|----------|------|--------------|----------|---------|----------|
| | | | | | Mean | Priority | Mean | Priority |
| | dangers from accidents and heavy traffic around the school | 4.19 | 1 | 3.72 | 4.11 | 1 | 4.22 | 1 |

| | | | | | | | | |
|--|---|------|---|------|------|---|------|---|
| External school physical characteristics | vehicle speeds and school roads dimension | 3.81 | 3 | | 3.75 | 3 | 3.84 | 3 |
| | pedestrian barriers | 3.67 | 4 | | 3.51 | | 3.74 | 4 |
| | characteristics of street surfaces | 3.38 | | | 3.20 | | 3.45 | |
| | parking characteristics | 3.95 | 2 | | 3.94 | 2 | 3.95 | 2 |
| | traffic sign | 3.31 | | | 3.26 | | 3.34 | |
| Internal school physical characteristics | Facility | 3.42 | | | 3.32 | | 3.46 | |
| | a safety zone and waiting for areas | 3.19 | | 3.22 | 3.08 | | 3.23 | |
| | building design | 3.07 | | | 3.19 | | 3.03 | |
| School Organization and Policy | internal school management | 3.30 | | | 3.24 | | 3.32 | |
| | external school management | 3.64 | | 3.5 | 3.52 | | 3.68 | 5 |
| | personal security organization | 3.58 | | | 3.64 | 5 | 3.56 | |
| Personal Attitude | child disappearance | 3.30 | | | 3.27 | | 3.31 | |
| | inconsistent with family lifestyle | 3.11 | | 3.20 | 3.05 | | 3.14 | |
| Weather | weather condition such as rainfall, hot climate | 3.64 | 5 | 3.64 | 3.69 | 4 | 3.62 | |

Furthermore, monthly income provided a measurement of family status. According to overall statistics, high-income families had more worry, and monthly income influenced different levels of anxiety toward (1) the hazards of accidents, (2) child disappearances and (3) demands of parking characteristics and spaces with statistical significance at $< .01$. This result explains that wealthy parents require more parking spaces due to increased usage of vehicles and that the parents have higher tension for child disappearances. Besides, the parents had different levels of anxiety on unclear and improper traffic signs with statistical significance at $.05$.

Although, the study also found that the parents who did not personally pickup-deliver students had safety concerning three external environmental factors of schools specifically (1) dangers from accidents (2) school traffic and vehicle speeds and school roads dimension and (3) pedestrian barriers, that differed from other groups because the parents had no experience of problems with statistical significance at $< .01$. In addition, the parents who personally pickup-deliver pupils had significantly different levels of tension on parking spaces from the others ($p < .05$) while presented in Table 5.

Table 5. Parental Anxiety Comparison

| Sub-factor | parent's gender | | student's level | | monthly income | | way to pick-up and drop-off | | school location | |
|---|-----------------|--------|-----------------|--------|----------------|--------|-----------------------------|--------|-----------------|--------|
| | T | Sig. | F | Sig. | F | Sig. | F | Sig. | F | Sig. |
| dangers from accidents and heavy traffic | | | | | 3.356 | .005** | 3.69 | .005** | 11.79 | .000** |
| vehicle speeds and school roads dimension | -1.96 | .05* | | | | | 4.62 | .001** | 5.95 | .003** |
| pedestrian barriers | | | 3.10 | .002** | | | 3.78 | .005** | 24.12 | .000** |
| characteristics of street surfaces | | | 3.34 | .001** | | | | | 3.61 | .027* |
| parking characteristics | | | | | 6.713 | .000** | 2.72 | .028* | 14.60 | .000** |
| traffic sign | | | | | 2.274 | .045* | | | 4.46 | .012* |
| Facility | | | | | | | | | 15.71 | .000** |
| a safety zone and waiting for areas | | | | | | | | | 3.91 | .02* |
| building design | | | -1.96 | .05* | | | | | 6.41 | .002** |
| internal school management | | | | | | | | | 4.22 | .015* |
| external school management | | | 2.10 | .036* | | | | | 5.39 | .005** |
| personal security organization | | | | | | | | | 4.39 | .013* |
| child disappearance | -2.64 | .008** | | | 3.135 | .008** | | | 9.96 | .000** |
| inconsistent with family lifestyle | | | | | | | | | 3.35 | .036* |
| weather condition | -2.57 | .01** | | | | | | | 5.43 | .004** |

** $p < .01$ / * $p = .05$

Also, the study also found that the parents who did not personally pickup-deliver students had safety concerning three external environmental factors of schools specifically (1) dangers from accidents (2) school traffic and vehicle speeds and school roads dimension and (3) pedestrian barriers, that differed from other groups because the parents had no experience of problems with statistical significance at $< .01$. In addition, the parents who personally pickup-deliver pupils had significantly different levels of tension on parking spaces from the others ($p < .05$) while presented in Table 5.

When the worry was compared by the school, i.e., between Anuban Ranong School, Anuban Phangnga School and The One Municipal School in Chumphon, the majority of samples had different levels of anxiety with statistical significance at $< .01$ and $.05$. Anuban Ranong School had the highest level of worry, followed by Anuban Phangnga School and The One Municipal School in Chumphon, respectively. Accordingly, the security of problems was highest in Anuban Ranong School. However, the different concern levels affected by the different environment contexts of each school. (Table 5)

3.5 Student's Self-Help Abilities

Overall, the majority of parent's opinions toward student's self-help abilities showed that first-year kindergarten students had no self-help abilities (60.4%), followed by some self-help abilities as they entered first-second grade (40.7%). Further, up to 64.4 percent of parents viewed that students in grades five to six already had high self-help abilities, and up to 90.6 percent of students in grades five to six already had independence in walking or bicycling to school while presented in Table 6.

Table 6. Student's Self-Help Abilities

| Self-help abilities | The percentage of each class. | | | | | Total |
|---|-------------------------------|---------------------|----------------------|----------------------|----------------------|-------|
| | kindergarte n 1 | kindergarten 2-3 | Primary grade 1-2 | Primary grade 3-4 | Primary grade 5-6 | |
| no self-help abilities | 60.4 | 25.3 | 9.3 | 2.2 | 2.7 | 100 |
| partial self-help abilities | 1.8 | 15.7 | 40.7 | 22.7 | 19 | 100 |
| high self-help abilities | 0.6 | 0.3 | 8.1 | 26.7 | 64.4 | 100 |
| ability to walk/ride bicycles to school | 0.3 | 0.1 | 1.2 | 7.8 | 90.6 | 100 |

When the self-help abilities of students were compared between groups of parents with kindergarten students and primary school students, opinions were found to differ in every aspect with statistical significance at < .01. In addition, the finding as mentioned earlier concurs with the views of parents categorized by student classes, through indicating that parents who have young children in their care have concerns for their children and hold the view that their children do not have self-help abilities for traveling (Table 7).

Additionally, mothers were more likely than fathers to hold the view that students have fewer self-help abilities with statistical significance at < .01. Furthermore, differentiation in monthly income resulted in differences in student's independence competencies in the majority of students with statistical significance at < .01 while presented in Table 7.

Table 7. Student's Self-Help Abilities Comparison.

| Self-help abilities | kindergarten parental and primary parental | | gender of parents | | student' level | | monthly income | |
|---|--|--------|-------------------|--------|----------------|--------|----------------|--------|
| | T | Sig. | T | Sig | F | Sig | F | Sig |
| no self-help abilities | 4.37 | .000** | 4.05 | .000** | 4.08 | .003** | 2.43 | .03* |
| partial self-help abilities | 5.92 | .000** | | | 13.96 | .000** | 2.67 | .02* |
| high self-help abilities | 4.15 | .000** | | | 7.47 | .000** | 3.28 | .006** |
| ability to walk/ride bicycles to school | 3.12 | .002** | | | 4.53 | .001** | | |

** p < .01 / * p = .05

3.6 Requirements for School Improvements

Based on the opinions of parents on improvements aimed at reducing all eight worry opinions, the parents would like overall improvements in every aspect to a high degree on the five-level scale at 4.00 mean score. The top three most urgent improvements were regulating school traffic, increasing school safety and improving areas for picking up-delivering students presented in Table 8.

On comparing the opinions between parent gender, differences were found on (1) separating student pick-up and drop-off locations, (2) improving traffic signs and, (3) creating a student identification system plus teacher and student training. Mothers tended to set higher demands, especially on teacher and student practice, thereby indicating greater sensitivity in regards to perceiving social problems than men. Furthermore, parents of students in different classes would like improvements in school safety and organized walkways especially so for parents of lower primary school students who could use sidewalks but whose parents viewed that they could not care for themselves as well as older children in higher grades while presented in Table 9.

On monthly income, families with higher income had higher demands for improvements. Besides, when comparing the differences between family income, the opinions about improvements to student pick-up and drop-off areas differed with statistical significance at < .01. Furthermore, views on developing safety zone, traffic signs, road surfaces, creating an identification system for students, parents and vehicles and training teachers and students differed with statistical significance at .05. Moreover, the analysis comparing the differences in ideas about improvements at three schools showed that differences exist in two aspects, specifically, organizing snack shops and walkways and separating student pick-up and drop-off locations because only Anuban Ranong School uses a system to segregate student pick-up and drop-off places between kindergarten and primary students (Table 9).

Table 8. Demands for School Improvements priority.

| Requirements | Mean | SD. | Priority |
|---|------|-------|----------|
| Traffic management around the school to ensure safety, and give importance to walking and bicycle use | 4.28 | 0.961 | 1 |
| Separating student pick-up and drop-off locations | 3.78 | 1.124 | 8 |
| Improving student pick-up and drop-off locations | 4.1 | 1.015 | 3 |
| Improving the internal environment of the school to ensure safety | 4.11 | 0.989 | 2 |
| Organizing snack shops and walkways | 4.01 | 1.039 | 5 |

| Requirements | Mean | SD. | Priority |
|---|------|-------|----------|
| Improving traffic signs and pedestrian surfaces | 3.92 | 1.049 | 6 |
| Creating an identification system for students, parents, and vehicles | 3.82 | 1.073 | 7 |
| Training teachers, parents, and students about safety | 4.02 | 1.021 | 4 |

While the questionnaires on other opinions for improving the school environment from parents can be summarized into three guidelines as follows: (1) Improving the two physical conditions facilitating child safety, namely, provide protection from sunlight and rain and improving the internal environment of the school for kindergarten students with particular attention to increasing the security of bathrooms and school buildings; (2) Safety management for schools such as increasing the number of teachers on the responsibility to provide assistance at pick-up and drop-off locations such as entrances, segregating student pick-up and drop-off areas, and separating time for pick-up and drop-off of different grades of students; (3) Preventing outside persons from entering schools and identifying parents using pick-up and drop-off cards, signatures and CCTVs.

Table 9. Demands for School Improvements Comparison.

| Requirements | gender of parents | | kindergarten parental and primary parental | | student' level | | monthly income | |
|---|-------------------|------|--|--------|----------------|------|----------------|--------|
| | T. | Sig. | T. | Sig. | T. | Sig. | T. | Sig. |
| Separating student pick-up and drop-off locations | -2.22 | .02* | | | | | | |
| Improving student pick-up and drop-off locations | | | | | | | 3.19 | .007** |
| Improving the internal environment of the school to ensure safety | | | | | | .04* | 2.91 | .013* |
| Organizing snack shops and walkways | | | 3.05 | .002** | | | | |
| Improving traffic signs and pedestrian surfaces | -2.10 | .03* | | | | | 2.74 | .018* |
| Creating an identification system for students, parents, and vehicles | | | | | | | 2.46 | .03* |
| Training teachers, parents, and students about safety | -2.22 | .02* | | | | | 2.25 | .04* |

** p < .01 / * p = .05

4.0 Discussion

Walk and bike friendly city is the project with extensive processes associated with quantitative research method and participatory design approach. This present research is only a part of the projects that aimed to understand the problems and determine what needed to be urgently revised, which would lead to effective school environmental improvement and student's safety. The findings suggested that 1) Anxiety hidden in behavioural expressions: Parent's pick-up and drop-off behaviours were the final result expressed through environmental perception, anxiety, and attitude towards children. Behaviour assessment alone could not reflect what the parents were worried about. For example, those who drove to drop their children off in the school might be worried about the unsafe sidewalks or might have other personal attitudes. 2) Factors affecting parental anxiety: The factors that had an influence on parental anxiety included safe environment, school management, and personal attitudes, which is consistent with the previous studies (Carver, 2008; Teddy, 1999; and Panter, 2008). Each factor differently affected parental anxiety depending on regional context, for instance, parents in the southern provinces were found to be worried about the weather. 3) Self-help ability: The parent's broad attitudes towards students' self-help ability were assessed. In the next studies, the attitudes of students in "Kla Dem Group", who have been trained to achieve higher self-help ability, towards students' self-help ability should be examined (Conger, 1969). 4) Prioritization without the current situation assessment: Understanding the factors mostly affecting parental anxiety so as to use the obtained results to improve the environment of the schools with different contexts required the current situation assessment. The assessment results should be compared with the future results of the improvements in order to gain the accurate priority (Guba, 1989).

5.0 Conclusion

The study can be concluded that majority women who serve the student to picking up and delivering from home to school. Although, the monthly income of the parent population ranged from low to moderate that they majority of parents were married. The mothers had higher concern levels than fathers because women had higher social worry than men. Besides, higher monthly income increased worry, and different local conditions allowed various levels of parental safety concern. Moreover, the parents had different behaviors on picking up and delivering students in the mornings and evenings. In other words, more time was spent picking students up because the parents had to clearly define a location for picking students up, as the parents could not park at the school gates and had to park somewhere else and walk over to pick the students up. Furthermore, the study found that parents had moderate to high concern within safety of students. The external school physical characteristics caused the greatest worry in parents, followed by weather because the schools were located in the southern region, while the third factor was school safety management. Also, different monthly income, gender, and grades presented varying levels of concern. Concurrently, student self-help abilities were different on income, gender, grade and school area.

1. Improve the physical environment of the school at the school, pick-up and drop-off spaces, and reduce risk areas around the school to ensure safety, and give importance to walking and bicycle use.

2. Maintain the safety of zones such as operating snack shops along walkways, and limiting access to uninvolved persons.
3. Develop facilities and comforts such as roofs, pathways, waiting for areas, and signs for suitable handle activities.

6.0 Future Research

This research is the first step to confirm the factors affecting parental anxiety according to Thailand' context with the use of mix-method technique and more complicated statistics before conducting further research in other regions nationwide, which will contribute to determining an appropriate approach to improve the physical environments of schools that are safe for students.

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