

Background Differences of Parental Attributes: A Case Study of a Preschool Road Safety Education Programme in Perak

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ABSTRACT

This study was carried out to envisage and examine the plausible relationships of parental road safety knowledge, attitude and practice in relation to preschool children's involvements in a road safety education programme in Perak, Malaysia. Three local preschools were selected for this purpose, in which the children underwent an educational road safety programme. The respondents consisted of 100 parents of the preschoolers (note that two private and one government preschools were chosen through a purposive sampling method). Ethnicity was found to be significantly different compared to knowledge ($\chi^2 = 16.272$, $p \leq 0.05$) and practice ($\chi^2 = 10.635$, $p \leq 0.05$) scores. Chi-square analyses indicated that there is an association between parental road safety attitude and practice scores ($\chi^2 = 21.444$, $p \leq 0.05$). In addition, the study also revealed that the attitude score varied significantly between the parents, while no significant difference was found between gender in knowledge and practice scores. However, this study also postulated that parental attitude and practice on road safety are moderately related to each other. Furthermore, the findings of the analyses also revealed certain gender inequalities, as the study indicated that female parents might have poorer knowledge and attitude scores. However, they appeared to be capable of showing more care and concern over road safety in relation to their preschool children's safety and well being. Thus, it is hypothesized that road safety education ought to be inculcated among parents, together with their children, *vis 'a vis'* to the current campaign on road safety education among young children.

Keywords: Parental road safety attributes, gender, ethnicity, road safety education, preschool children

INTRODUCTION

Pedestrian injuries are the second leading cause of unintentional injury-related death among children between the ages of 5 and 14 (National SAFE KIDS Campaign, 2002a, as cited in Miller, Austin & Rohn, 2004). Based on the various studies conducted by National Highway Traffic Safety Administration [NHTSA] (2006), younger children appeared to be at greater risks, as 25 percent of children killed in traffic crashes were between the ages of 5 and 9 (Ahmad

Hariza, *et al.*, 2007; the Ministry of Transport, 2006; Miller, *et al.*, 2004). Moreover, a report released by the American Transportation Research Board (2002) on the relative risks of school travel examined 9 years of injury and fatality data across all travel modes showed 590 child pedestrian injuries and 2,050 bicycle injuries per 100 million miles of travel to school compared to merely 90 injuries per 100 million miles for children riding in passenger cars driven by adults. The same trend was observed for fatalities per 100 million student-miles

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travelled to school, with 8.7 and 12.2 deaths per 100 million student-miles for child pedestrians and bicyclists, respectively, compared to 0.3 for child passengers in adult-driven private vehicles (American Transportation Research Board, 2002).

Recent years have seen a significant increase in the traffic accidents among child pedestrians in Malaysia (Ahmad Hariza *et al.*, 2007; Mohamad Ibrani, *et al.*, 2009). Child pedestrians, especially in the rural settings, are vulnerable to road accidents. Zeedyk, *et al.* (2001) argued that pedestrian casualty rates for children are more than four times than that for adults. Moreover, it was also observed that in a review of children's road safety issue, 'pedestrian accidents are widely regarded as the most serious of all health risks facing children in developed countries' (Thomson, *et al.*, 1996: p.4).

There is a paucity of studies in the literature from which evidence regarding the effectiveness of educational road safety modules can be ascertained and hence a clear need to increase the effort on developing this evidence base to indicate that children have a larger number of accidents than would be expected from their representation in the population (Pitcairn & Edlmann, 2000). In other words, children must therefore be less competent in traffic than adults. As cited in Pitcairn and Edlmann (2000: p.391-392);

"...Piaget's theory (1969, 1970) suggests that children make hazardous decisions because they cannot appreciate the interrelations amongst time, velocity and distance until around 10 years of age. The young child confounds time and velocity with distance, assuming, e.g. that the vehicle which travels the longest distance must be going fastest, regardless of time, or for the longest time, regardless of velocity, thus selectively attending to only one of the variables involved. Using the Piagetian choice paradigm, in which the participant chooses which

of two vehicles travelling alternative paths goes faster, or further, or for a longer time, Siegler and Richards (1979) showed that full mastery of the concepts was not achieved until 20 years of age."

Meanwhile, Clayton, *et al.* (2005) studied the effect of using the road safety education resource on children's knowledge and understanding about road safety. Using an experimental approach, the 8 to 11 years old children participated in the experimental group were exposed to the educational programme for the duration of five to six weeks. A pre-experimental-post design was applied in the study. According to the authors, a pre-test and two post-tests were conducted, whereby the first post-test was done after week six of the programme, while the second post-test were completed after a period of four months. The results showed that the experimental group obtained significantly higher scores than the control group. Thus, it could be ascertained that educational program on road safety might contribute to the inculcation of knowledge and awareness among young children (Ahmad Hariza *et al.*, 2007).

Apart from the issue on children road safety education, some researchers also focused on developing strategies for child pedestrian safety. Among other, a classic review on the study by Thomson (1996) warrants a justifiable attention. The study examined the effectiveness of individual and group training of children's judgment concerning safe crossing locations and routes, both at the roadside and on the table-top traffic model. In exploring the effectiveness of the training, Thomson (1996) also designed two studies, in which the first study involved the individual participants and the participants of the second study were trained in the groups of five. The participants in the individual settings were trained in one of the two ways, either at the roadside or on a table-top traffic model in classroom. For the group setting, however, both types of training were applied. The results from

the two studies on road safety training revealed that the group training effects were more robust than the individual training.

Evidence from a number of studies indicates that parents spend more of their time on keeping children safe (McMillan, 2005). Other studies have shown that parents have responded to the contemporary perception of threats to child safety—from traffic, abduction, violence—by increasing supervision and reducing children's autonomy (Osberg & Stiles, 2000). It is crucial to note that children's safety is high on the agenda in Malaysia, whereby the high increase in child fatalities on road traffic accidents had signalled enough warnings to the parents. These events are fortunately minor cases to overall road traffic accidents, but are horrific enough to keep parents eternally vigilant. More prosaic, but also of great concern to parents, is the educational needs to prevent further threat to children from road traffic. According to McMillan (2005), parental attitudes were seen as a mediating factor to their children's road safety, apart from the fact that the children's self-efficacy was positively correlated with physical activity, while perceived barriers (such as the lack of time and lack of interest) were negatively correlated with activity. In addition, supportive social environments (e.g. parents who encourage and play with their children, transport children to activities, and/or are active role models) were also positively associated with activity, suggesting the influential role parents play in guiding children's behaviour through proper education (Sallis, *et al.*, 2000; Trost *et al.*, 1997; Zakarian *et al.*, 1994; Sallis *et al.*, 1993; Stucky-Ropp & DiLorenzo, 1993; Sallis *et al.*, 1992; Klesges *et al.*, 1990; Tappe, *et al.*, 1989).

Therefore, imperatives of the inculcation on the importance of 'good' road safety practices in the early stage are vital, as these will then become a norm for this generation when they become older (Pitcairn & Edlmann, 2000). Hence, the purpose of the study was to assess the background of the parental attributes (in relation to their road safety knowledge, attitude and practice scores) of the preschoolers involved in a Road Safety Educational Teaching Module

in preschools (a Universiti Putra Malaysia's research project, funded by the Ministry of Higher Education of Malaysia, under the Research University Grant Scheme). Moreover, it is also argued that road safety initiatives have tended to focus on children's pedestrian skills, trying to improve their relevant knowledge, attitude, practice and behaviour (for a review, see Thomson *et al.*, 1996). Thus, this study was premised in a hypothesized statement that parental influences and road safety behaviour might also be effective in improving children's pedestrian and road safety skills. The present study was also designed to assess parent's road safety knowledge, attitude and practice scores across gender, ethnicity and among the attributes of three developmental domains of affective, psychomotor and cognitive (road safety knowledge, attitude and practice scores as per determined by the research measurements).

METHODOLOGY

Research Design

In the present study, the methodology was premised on a multiple-case, replication design (Yin, 1994). As cited in Yin (1994, p.45), 'the evidence from multiple cases is often considered more compelling than a single case study, and the overall study is therefore regarded as being more robust' (Herriott & Firestone, 1983). In a previous study, Ahmad Hariza *et al.* (2006) conducted a baseline research survey in two districts in Kelantan Darul Naim, namely Pasir Mas District (exposure group) and Tanah Merah (control group) to determine whether the 'Road Safety Kit' teaching modules had any effects towards school children's knowledge, attitude and practice towards road safety and to evaluate the effectiveness of the implementation of the road safety modules embedded within the teaching of Bahasa Melayu and English subjects. The data were collected via the 'focus group discussion' (FGD) approach. Prior to the data collection stage, the Experimental Road Safety Educational Kit was distributed to selected preschools in Perak, Malaysia.

At that time, enumerators were given sets of standard Focus Group Discussion (FGD) forms and questionnaires. The children whose parents and schools gave consent were then given (to be surrendered to their respective parents) the structured questionnaire (Set C) and Road Safety-KAPRS (Ahmad Hariza *et al.*, 2007), using the semi-structured Focus Group Discussion (FGD) form (Set B) and guiding interview schedules. In each group, the preschool children received one 20 minute session on Road Safety Education per week, for 22 weeks, with catch-up sessions provided for absentees. In the end, each child completed full number of sessions, except for five children who moved away during the study, and were therefore not included in the subsequent analysis. The availability of the multiple experimenters and research enumerators, together with the assistance of the teachers and teacher assistants, allowed for all the focus group discussions of parents to be run simultaneously with one of the groups, in two separate districts away from the distractions of other school activities. Over the six weeks, all the experimenters were counterbalanced over three groups to control for any experimenter effects. Hence, the current study adapted the items on the questionnaire to accommodate the need of assessments for the parents' road safety knowledge, attitude and practice measurements. Each parent was treated as a single-case study as per respondent, and this was replicated for all 105 respondents, which accumulated to 100 case studies, with the dropout rate of 5 respondents (due to the failure of the re-collecting data instruments).

Participants

In this study, the data were collected from 100 parents of preschoolers enrolled at three different preschools to investigate on road safety education (conducted by researchers from Universiti Putra Malaysia) through a survey method. The data were collected using a set of systematically structured close-ended questionnaire, focus-group discussions and interviews.

The participants in this study were chosen through a purposive sampling method. The preschoolers involved in this on-going research project on road safety education (a research project under the sponsorship of the Ministry of Higher Education and the Ministry of Science, Innovation and Technology, Malaysia) were chosen, whereby a survey was conducted on their respective parents (one preschooler represented one parent as per one respondent). For each preschool, a total of 35 respondents were chosen. However, five parents were excluded from this study because of the incomplete questionnaires. Appropriate ethical clearance was also granted via the on-going study on road safety education (in which the current study was a part of the 'spill-over' effect study) and the consent forms were gained and distributed prior to any data collection. In addition, the respondents were also briefed and acknowledged of their rights and assured that no information would be divulged without their prior agreement.

Instruments and Procedures

A set of close-ended questionnaire was developed based on the objectives of the study. The questionnaire was partially adapted from the Knowledge, Attitude and Practice Rating System (KAPRS) by Ahmad Hariza *et al.* (2006) and Ahmad Hariza *et al.* (2007). The questionnaire consisted of four sections, which included parents' socio-demographic background, knowledge on road safety, parental attitude towards road safety and practice. Most of the questions in these questionnaires are closed-ended which required the parents to tick or circle the most appropriate answers.

The recent research demonstrates the importance of Knowledge, Attitude and Practice Rating System (KAPRS) in determining the effectiveness of the implementation of a road safety teaching module (Ahmad Hariza *et al.*, 2007; Mohamad Ibrani *et al.*, 2009). According to Ahmad Hariza *et al.* (2007), the test-retest reliabilities of the KAPRS suggest an adequate stability of the KAPRS for all the three forms (Teacher, Parent and Student forms). Moreover,

both the ethnic and multi-racial representations in the KAPRS sample (which included 900 self-ratings of children, 102 parents, and 25 teachers) had also provided a psychometrically sound means of measuring the perceived knowledge, attitude and practice scores and pedestrian skills of adults and children (Ahmad Hariza *et al.*, 2007).

RESULTS AND DISCUSSION

Furthermore, the coefficient alpha, the correlational index of internal consistency for all forms ranged from .83 to .94 for the Knowledge scale from .73 to .88 for the Attitude scale, and

.95 for the Practice scores. These coefficients were found to be representatives of a high level of homogeneity among items.

Data Analysis

The descriptive analysis was applied to the selected variables to compute the mean, frequency, and standard deviation. Chi-square, χ^2 test, was used to determine the association between parental knowledge, attitude and practice scores on road safety and their demographic status, which included gender, age group and ethnicity. The association between parental knowledge, attitude and practice scores

TABLE 1
Study instruments

Sections	Contents
Part 1	<p>Interviewed parents' socio-demographic background:</p> <ul style="list-style-type: none"> • Socio-economic background • Age • Race • Types of vehicle respondent have <p>- this section consisted of 12 questions.</p>
Part 2	<p>Knowledge on road safety:</p> <ul style="list-style-type: none"> • This section consisted of 14 questions regarding the knowledge on road safety. • The answer was in the form of yes – 2; no – 1. • The total scores in the range of 24-28 marks were categorized as having a “good’ knowledge”, 19-23 marks were categorized as having a “moderate’ knowledge” and 14-18 marks were categorized as having a “poor’ knowledge”.
Part 3	<p>Interviewed parents' attitude towards road safety:</p> <ul style="list-style-type: none"> • This section consisted of 14 questions regarding the attitude of parent towards road safety. • Likert scaling was used to evaluate the questions, which was shown as follow: strongly agree – 4 marks; agree – 3 marks; disagree – 2 marks; strongly disagree – 1 mark. • Total scores: minimum (14 marks) and maximum (56 marks). • The parental attitude was categorized in to 3 categories: “good’ attitude” (43-56 marks), “moderate’ attitude” (29-42 marks) and “poor’ attitude” (14-28 marks).
Part 4	<p>Interviewed parents' practice on the road:</p> <ul style="list-style-type: none"> • This section consisted of 12 questions on road practice. • The interviewed parents were required to choose appropriate answers based on from their points of view from the three choices given (always, sometimes and never). • The total scores: minimum (12 marks) and maximum (36 marks). • The parental practice on the road was categorized into 3 categories: “good attitude” (29-36 marks), “moderate attitude” (21-28 marks) and “poor attitude” (12-20 marks).

on road safety was also determined using the chi-square analysis. The significant level for this study was set at $p \leq 0.05$.

When the plausible patterns between the three developmental domains measured (namely, parental knowledge, attitude and practice scores on road safety) were identified, the preceding statistical method were used to explore these associations more formally; however, given the small sample size, these were applied only to the tests where the data were collected from all the parents in the three preschools. In addition, it should also be noted that the results of any statistical methods must be taken tentatively – as pointers rather than certainties – as the sample preschools, parents and preschool children, and not as random.

The Plausible Association of Parents' Demographic Status and Their Knowledge, Attitude and Practice Scores on Road Safety

The mean scores for the knowledge, attitude, practice and the total mean scores for the parents' gender, age group and ethnicity were analysed using the independent sample T-test and the analysis of variance (ANOVA) with the LSD's multiple range tests ($p \leq 0.05$). The tests were also carried out to compare the differences between these variables. The mean scores of knowledge, attitude, practice and total mean scores between the parents' gender are shown in Table 2. Meanwhile, the independent sample t-test showed that the mean scores for knowledge, practice and total scores indicated no discernible gender differences. Interestingly, the attitude scores between male and female

parent were significantly different in relation to parental knowledge, attitude and practice scores on road safety.

The most important aspects of this study was probably the assessment of the parental genders on knowledge, attitude and practice scores on road safety, where it was statistically discerned that the male parents scored a "good" knowledge score (scaled from 24-28), as compared to the female parents with merely an 'average' knowledge score of 23-46. Based on the current bodies of literature (see reviews by Ahmad Hariza *et al.*, 2007 and Mohamad Ibrani *et al.*, 2009), however, the previous studies have consistently indicated that the female parents have the tendency to be more knowledgeable in relation to road safety concepts. Therefore, it is postulated that the crux of the matter almost certainly resides in the definitions of 'knowledge' (Pitcairn & Edlmann, 2000), and the nature or the relationships between attitude and practice across the genders of the parents (as consistently cited in Saidon & Boyle, 1994; Miller *et al.*, 2004; Lam, 2001; Lam, 2005). Hence, as commonly and classically posited by Yin (1994) in discussing on the outcomes of case studies, it is reiterated that the findings of this study can at best be suggestive rather than in any way definitive. At the same time, the authors do not make any claims that the sample of the current study is representative, nor that the findings are in any way statistically reliable. However, in a number of instances, the findings confirm the arguments made above in the initial proposal of the current study. With that caveat, to sum up this section of discussion, it would seem that it is possible to discern that the statistical analysis

TABLE 2
The mean scores of knowledge, attitude, practice and the total mean scores according to parent's gender

Gender	Knowledge	Attitude	Practice	Total
Male	24.23 (1.83) ^a	46.74 (4.51) ^a	28.31 (4.57) ^a	99.29 (7.36) ^a
Female	23.46 (1.86) ^a	46.69 (5.73) ^b	29.23 (4.70) ^a	99.38 (9.03) ^a

All data are presented as means (SD). The mean value followed by different letters in the same column differs significantly ($p \leq 0.05$); Independent sample T-test.

has shown that the mean knowledge score is not significantly different between the genders. By contrast, the results have indicated that the female parents have a “good” knowledge score on road safety education in relation to their preschool children’s safety. Similarly, as portrayed in the mean practice score, the male parents possess a “moderate” practice, whereas the female parents have attained a “good” practice score, with no statistically significant difference between the two genders in terms of the mean practice scores. Nevertheless, it is necessary to emphasise that these findings are suggestive rather than conclusive, and that any firm conclusions of this nature would require a properly founded statistical research.

Instead, the methodological framework of the current study needs to be assessed in the light of the fact, in which, it appears in different forms in different circumstances and different contexts (Ahmad Hariza *et al.*, 2007; Mohamad Ibrani *et al.*, 2009). Thus, the collection and the analysis of the quantitative data, as well as the use of the survey methods are not ruled out; they are subordinated to the need so as to conceptualise the qualities of a phenomenon and to understand how road safety awareness is socially constructed among the parents of preschool children undertaken in the study. Statistically, it is not surprising that both the male and female parents have “good” practice scores, as with a small number of the sample, standard errors are large, and significant effects will

only be found if between group differences are enormous (Yin, 1994; Field, 2000). Moreover, in determining parents’ attitude on road safety education, both the female and male parents have “good” attitude scores on road safety awareness although the attitude scores between both genders vary significantly. Hence, the need to elucidate the importance of gender and ethnicity in road safety studies has directed the current study to examine the changing gender and ethnic compositions of the context of the road safety trajectories, as road safety education and awareness programmes are formalising concretely in Malaysia’s mainstream education, with the implementation of Road Safety Education in the subject of Bahasa Melayu in primary schools (see Ahmad Hariza *et al.*, 2007 and Mohamad Ibrani *et al.*, 2009 for reviews).

The mean scores of knowledge, attitude, practice and the total scores of the parents showed no significant difference among the age groups (Table 3). However, the post-hoc comparison of the ANOVA test showed that there was a significant difference between the parent age groups of 30-39 and 40-49 in the mean scores of the parents’ knowledge on road safety ($p \leq 0.05$). On the contrary to the recent practice on statistical post-hoc power analyses, the post hoc tests in this study were designed to only supplement the obtained significant omnibus F-test, with a factor that consisted of three or more means, whereas additional exploration

TABLE 3
The mean scores of knowledge, attitude, practice and the total mean scores among parents’ age groups

Age group	Knowledge	Attitude	Practice	Total
20-29	23.65 (1.27) ^a	46.88 (4.62) ^a	27.24 (4.91) ^a	97.76 (6.86) ^a
30-39	23.35 (2.17) ^{a,b}	46.45 (5.94) ^a	29.27 (4.81) ^a	99.07 (9.48) ^a
40-49	24.58 (1.35) ^{a,c}	47.25 (4.60) ^a	28.83 (4.23) ^a	100.67 (7.51) ^a
50-59	24.50 (0.71) ^a	49.50 (0.71) ^a	31.00 (4.24) ^a	105.00 (2.83) ^a
60-69	24.00 (1.88) ^a	43.00 (0.00) ^a	32.00 (0.00) ^a	99.00 (0.00) ^a

All data are presented as means (SD). The mean value followed by different letters in the same column differs significantly ($p \leq 0.05$); ANOVA test with LSD’s multiple comparisons.

of the differences among means is needed to provide specific information on which means are significantly different from each other (as cited in Field, 2000).

The results also showed that parents from the age groups of 20-29, 40-49, 50-59 years and 60-69 had 'good' mean knowledge scores, except for the age group of 30-39 years. Similarly, as for the case of parents' knowledge and gender, parents from the age group of 30-39 years were found to be significantly different from those parents in the age group of 40-49 years. Interestingly, parental attitude on road safety, and parents from all age groups obtained 'good' mean attitude scores. None of them from any age groups had a 'moderate' or a 'poor' mean attitude score on road safety awareness and the need for road safety education, in relation to their preschool children.

For the purpose of this study, of particular interest is the reported outcome of the parental road safety knowledge, attitude and practice scores, in relation to the domains pertaining to the ethnicity and age groups of the parents of the preschool children who have undergone the road safety educational programme. The most striking finding is that all the three ethnics of the sampled parents have 'good' mean total scores on the parental road safety knowledge, attitude and practice scores. Meanwhile, the mean scores of knowledge, attitude, practice and total mean scores for the parents' ethnicity are shown in Table 4. All the three ethnic groups of the parents involved in this study achieved the mean total scores of more than 95 points. However, the evidence on achieving high scores was not

unequivocal in the sense that the information on the inter-ethnic road safety awareness was not taken into account in the analysis of the data. The psychometric questions used to measure the knowledge, attitude and practice of road safety did not ascertain whether such high scores represented the whole population of ethnicity or particular groups of parents. Moreover, positive data interaction within the groupings of ethnicity might not reflect the true context of road safety awareness and merely indicated increased interaction of information which might contribute to the increased knowledge, practice and attitude scores on the adapted scales of the KAPRS (Ahmad Hariza *et al.*, 2007). Nonetheless, it does provide some valuable insights which may portray an indicative nature of the significance of ethnicity pertaining to educational knowledge inculcation (Mohamad Ibrani *et al.*, 2009). Thus, it is within this shared landscape that a similar analysis was undertaken for the inter-ethnic of the preschoolers' parents involved in the road safety programme. The results obtained indicated that the Malay parents had 'good' mean knowledge scores, whereas the Malay and Indian parents attained 'good' mean attitude and practice scores, and the Chinese parents obtained 'moderate' mean knowledge, attitude and practice scores. Moreover, the Indian parents also gained 'moderate' mean knowledge scores. It is important to note that no significant differences were found between the Chinese and Indian parents in term of their mean knowledge scores ($p > 0.05$). It is also noteworthy to note that the results of the mean scores of attitude, practice and total scores,

TABLE 4
The mean scores of knowledge, attitude, practice and the total mean scores in parents' ethnicity

Ethnicity	Knowledge	Attitude	Practice	Total
Malay	24.49 (1.10) ^a	48.24 (3.26) ^a	30.32 (3.44) ^a	103.05 (4.67) ^a
Chinese	23.32 (1.96) ^b	45.29 (6.15) ^b	27.46 (5.04) ^b	96.07 (9.26) ^b
Indian	23.00 (3.16) ^b	50.00 (2.89) ^a	33.00 (1.41) ^a	106.00 (4.90) ^a

All data are presented as means (Standard Deviation). The mean value followed by different letters in the same column differs significantly ($p \leq 0.05$); ANOVA test with LSD's multiple comparisons.

as evidenced in the findings of this study, implicated that these were not significantly different between the Malay and Indian parents on road safety awareness.

The outcome of this study coincides with that of the study by Lam (2005) on Vietnamese speaking parents or caregivers, whereby they were found to have perceived a similar level of road safety awareness and the risk in the road environment by the mainstream Australian parents. Coincidentally, it is interesting to note that they also considered road environment as significantly more hazardous for their children as pedestrians without the company of an adult. Thus, to a certain extent, this similarity warrants an indication that the parents of the preschoolers in Perak, Malaysia have a high sense of road safety awareness.

In line with the focus of this article, however, the singularly most important insight from the framework of the analyses is the fact that the current study is somewhat inconclusive. Hence, it is noteworthy to explore the chi square analysis revealed the absence of association between parental knowledge and attitude scores ($\chi^2 = 4.701$, $p = 0.319$) as well as between parental knowledge and practice scores on road safety ($\chi^2 = 3.311$, $p = 0.507$). There is a 'moderate' association between parental attitude and practice scores on road safety education ($\chi^2 = 21.444$, $p \leq 0.05$). In addition, the results also indicated that more than 50 percent of the parents obtained 'good' knowledge and attitude scores, as well as attitude and practice scores, while none obtained 'poor' knowledge and attitude/practice scores.

The emergence of the results showed that less than 50 percent of the parents obtained 'good' knowledge and practice scores, while only one of the parents had 'poor' attitude and practice scores. Here, the evidence reveals that the parents of preschoolers involved in the road safety education programme in Perak are seemingly aware of road safety and the safety of their preschool children when using the road. Moreover, a study on social development and traffic safety also showed that there were indirect links between knowledge and behaviours

(Granié, 2005), as compared to some studies which postulated that knowledge of road safety rules was not associated with parental safe road behaviour (Lam, 2001). It is also interesting to note, however, that the parents in the current study seemed to have better attitude and practice as compared to other variables. It is also worth noting that the attitude towards road safety was influenced by risk behaviour, especially the attitude towards rule violations and speeding (Iversen & Rundmo, 2004). Thus, the phenomena of parental perceptions can probably be used to determine parents' safe road modelling behaviour (Lam, 2001). Nonetheless, it is possible to confirm that the children's behaviour towards road safety may not be directly affected by parental supervision (West, Sammons & West, 1993). As indicated in the earlier section, the confirmation of the findings of this study would need more thoroughgoing statistical survey. Otherwise, it is interesting to see if the 'spill-over effect' does have an impact on the overall road safety education policy implementation on young children in Malaysia.

CONCLUSION

Even though some unanswered research questions may exist, the results discussed in the previous section seem to suggest that the adapted questionnaire of Knowledge, Attitude, and Practice Rating Scales (Ahmad Hariza, *et al.*, 2007) has served its ostensible purpose, namely to guide the aim of the current study on examining the level of parental road safety awareness and the involvement in their preschool children's road safety education. Most of the parents have 'good' scores in knowledge (23.85), attitude (46.72) and practice (28.77). In particular, the Malay and Indian parents have shown better knowledge, attitude and practice on children road safety as compared to their Chinese counterparts who obtained a 'moderate' level of road safety involvement. Nonetheless, the parents with 'good' knowledge were also found to have the tendency to have 'good' attitude, while those who have 'good' attitude also have a 'good' practice. Nevertheless, none of them

has 'poor' involvement in road safety education, except for one Chinese parent who scored 'poor' attitude and practice. However, the current study is very aware of the real tension, i.e. the need to generalise but not to bypass crucial differences in ethnic group dynamics in doing so (Mohamad Ibrani *et al.*, 2009); in other words, the requirement to simplify, but an awareness that ignoring rather nebulous concepts, such as feelings, mood while driving (or using vehicles) and intentions could render simplification meaningless in any real sense (Iversen & Rundmo, 2004). Thus, the theoretical position on the processes of road safety knowledge, practice and attitude inculcation and the need not to separate the social from the cognitive is partly evident both in the research design and analyses. As a concluding remark, road safety education, via a socio-culturally appropriate approach, should be inculcated among children, together with their parents, in order to fully understand the danger within traffic environment and to practice safety as pedestrians and road users among young children, and adults.

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REFERENCES

- Ahmad Hariza, H., Mohamad Ibrani, S., Zainol, A., Kulanthayan, K.C.M., Musa, A.H., & Radin Umar, R.S. (2006). *Preliminary Report on Micro-Targetting Activities on Road Safety Education in Primary Schools*. An unpublished preliminary report on Road Safety Education in Bahasa Melayu and Bahasa Inggeris Subjects in Kelantan Darul Naim. Road Safety Research Centre, Universiti Putra Malaysia.
- Ahmad Hariza, H., Mohamad Ibrani, S., Ma'rof, R., & Haslinda, A. (2007). *A proposal on Road Safety Knowledge, Attitude and Practice Rating System*. An unpublished report on Road Safety Knowledge, Attitude and Practice of Malaysian School Children: A Study on the Evaluation of Road Safety Education Effectiveness in the Bahasa Melayu Subject. Road Safety Research Centre, Universiti Putra Malaysia.
- Alex, P. (2007). *Status paper on road safety in Malaysia, Road Safety in Asia and the Pacific*. Retrieved April 15, 2008, from http://www.unescap.org/ttdw/roadsafety/Reports2007/Malaysia_RSpaper.pdf Transport and Tourism Division, United Nations Economic and Social Commission for Asia and Pacific, United Nation
- American Transportation Research Board (2002). *The relative risks of school travel: A nationwide perspective and guidance for local community risk assessment* (Special Report 269). Retrieved September 1, 2008, from <http://gulliver.trb.org/publications/sr/sr269.pdf>
- Beck, L. F., Paulozzi, L. J., & Davidson, S. C. (2007). Pedestrian fatalities, Atlanta Metropolitan Statistical Area and United States, 2000–2004. *Journal of Safety Research*, 38, 613-616.
- Clayton, A. B., Platt, C. V., Colgan, M. A. & Butler, G. (1995) *A child-based Approach to Road Safety Education for 8-11 Year Olds*. OVID Social Policy and Practice.
- Faudzi, M. M. Y. (2003). *The economic benefits of preventing motorcycle injuries*. Malaysian Institute of Road Safety Research. Retrieved March 26, 2008 from Journal of the Eastern Asia Society for Transportation Studies Vol. 5: <http://www.miros.gov.my/publications/TheEconomicBenefitsofPreventingMotorcycleInjuries.pdf>.
- Field, A. P. (2000). *Discovering statistics using SPSS for Windows: Advanced techniques for the beginner*. London: Sage.
- Granié, M.A. (2005). *A report from Social development and traffic safety*. Retrieved March 26, 2008, from Social development and traffic safety: Retrieved February 25, 2008, from http://www.securiteroutiere.equipement.gouv.fr/IMG/pdf/RR2_predit_go3_DSSR_f_synth-eng.pdf

- Herriott, R. E., & Firestone, W. A. (1983). Multisite qualitative policy research: Optimizing description and generalizability. *Educational Researcher, 12*(2), 14-19.
- Iversen, H., & Rundmo, T. (2004). Attitudes towards traffic safety, driving behaviour and accident involvement among the Norwegian public. *Ergonomics, 47*(5), 555-72.
- Kareem, A. (2003). Review of global menace of road accidents with special reference to Malaysia-A social perspective. *Malaysian Journal of Medical Sciences, 10*(2), 31-39.
- Klesges, R., Eck, L., Hanson, C., Haddock, C., & Klesges, L. (1990). Effects of obesity, social interactions, and physical environment on physical activity in pre-schoolers. *Health Psychology, 9*, 435-49.
- Lam, L. T. (2001). Factors associated with parental safe road behaviour as a pedestrian with young children in metropolitan New South Wales, Australia. *Accident Analysis & Prevention, 33*(2), 203-210.
- Lam, L. T. (2005). Parental risk perceptions of childhood pedestrian road safety: A cross cultural comparison. *Journal of Safety Research, 36*(2), 181-187.
- McCart, A. T., Hellinga, L. A., & Haire, E. R. (2007). Age of licensure and monitoring teenagers' driving: Survey of parents of novice teenage drivers. *Journal of Safety Research, 38*, 697-706.
- McMillan, T. E. (2005). Urban Form and a Child's Trip to School: The Current Literature and a Framework for Future Research. *Journal of Planning Literature, 19*(4), 440-456.
- Miller, J. A., Austin, J., & Rohn, D. (2004). Teaching Pedestrian Safety Skills to Children. *Environment and Behavior, 36*(3), 368-385.
- Ministry of Finance (2006). *Annual Report-2006*. Retrieved February 25, 2008 from <http://www.mof.gov.my>.
- Ministry of Human Resource of Malaysia.(2006). Labour forces' annual report year 2006. Retrieved February 12, 2008 from <http://ww.mohr.gov.my>
- Mohamad Ibrani, S., Ahmad Hariza, H., Shamsul Azahari, Z. B., Sha Harudin, L., & Koay Saik, H. (2009). *Comparative Study of Interactive Multimedia Learning Performance on Road Safety Education Among urban and Rural Preschool Children*. An unpublished report submitted to the Ministry of Higher Education, Malaysia under the Research University Grant Scheme 2007.
- NHTSA (National highway traffic safety administration) (2006). *Pedestrians*. Retrieved February 25, 2008 from Traffic Safety Facts, 2006 Data, National highway traffic safety administration, Washington DC, USA: <http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.dfedd570f698cabbf30811060008a0c/>
- Pitcairn, T. K., & Edlmann, T. (2000). *Individual Differences In Road Crossing Ability In Young Children and Adults*. British Journal of Psychology, *91*, 391-410.
- Radin Umar, R. S. (2006). Motorcycle safety programmes in Malaysia: how effective are they? *Int J Inj Contr Saf Promot, 13*(2), 71-79.
- Road Safety Plan of Malaysia. (2006). *Drive safe, ride safe, walk safe, you can make a difference*. Retrieved February 25, 2008, from : <http://www.panducemat.org.my/en/index.php> Road safety plan of Malaysia, Ministry of Transport Malaysia, 2006-2010.
- Saidon, N., & Baguley, C.J. (1994). Road accidents in Malaysia. Retrieved February 5, 2008 from *Proceedings: Seminar on Crash and Injury Control*. University Malaya, Kuala Lumpur.
- Sallis, J., Prochaska, J., & Taylor, W. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports and Exercise, 32*(5), 963-75.
- Sallis, J., Nader, P. Broyles, S. Berry, C., Elder, J. McKenzie, T., & Nelson, J. (1993). Correlates of physical activity at home in Mexican-American and Anglo-American preschool children. *Health Psychology, 12*, 390-98.
- Sallis, J., Alcaraz, J. McKenzie, T., Hovell, M., Kolody, B. & Nader, P. (1992). Parent behavior in relation to physical activity and fitness in 9-year-olds. *American Journal of Diseases of Children, 146*, 1383-88.

- Scottish Office. (1994). *Road Accidents Scotland 1993*. Edinburgh: Government Statistical Office.
- Stucky-Ropp, R., & DiLorenzo, T. (1993). Determinants of exercise in children. *Preventive Medicine, 22*, 880-89.
- Tappe, M, Duda, J., & Ehrnwald, P. (1989). Perceived barriers to exercise among adolescents. *Journal of School Health, 59*, 153-55.
- Thomson, J. A., Tolmie, A., Foot, H. C., & McLaren, B. (1996). *Child development and the aims of road safety education: A review and analysis* (Department of Transport Road Safety Research Report No. 1). London: HMSO.
- Trost, S., Pate, R., Saunders, R., Ward, D., Dowda, M., & Felton, G. (1997). A prospective study of the determinants of physical activity in rural fifth-grade children. *Preventive Medicine, 26*, 257-63.
- VICRoads (State of Victoria, Australia) (2005). *Young Driver Safety and Graduated Licensing Discussion Paper*. Have your say! August 2005.
- West, R., Sammons, P., & West, A. (1993). Effects of a traffic club on road safety knowledge and self-reported behaviour of young children and their parents. *Accident Analysis and Prevention, 25*(5), 609-618.
- Welsh Office. (1994). *Road Accidents: Wales No 14, 1993*. Cardiff: Statistical Directorate, Welsh Office.
- Yin, R. K. (1994). *Case study research: design and methods*. California: Sage.
- Zakarian, J., Hovell, M., Hofstetter, R., Sallis, J., & Keating, K. (1994). Correlates of vigorous exercise in a predominantly low SES and minority high school population. *Preventive Medicine, 23*, 314-21.
- Zeedyk, M. S., Wallace, L., Carcary, B., Jones, K., & Larter, K. (2001). Children and Road Safety: Increasing Knowledge Does Not Improve Behaviour. *British Journal of Educational Psychology, 91*, 391-410.