

CHILDREN'S RISKY ACTIVITIES AND PARENTS' IDEAS ON CHILDREN'S RISK-TAKING BEHAVIOUR

HAMID SOORI, Ph.D.

*From the Department of Community Medicine, Medical School, Ahwaz University of Medical Sciences,
P. O. Box. 61355-45, Ahwaz, I. R. Iran.*

ABSTRACT

A cross-sectional study with children's and parents' self-completed questionnaires was carried out to evaluate parents' ideas on children's risk-taking behaviours and children's risky activities after school hours by age (7 and 9 years) and sex. Nine elementary schools were randomly selected and 476 pupils aged seven and nine years and 471 parents were studied. Most parents (90.1%) believed that their children take risks when they play outside after school anyway. The top three risky activities were climbing walls (25.0%), climbing trees (14.8%) and riding carelessly (14.1%). Overall, boys were more likely to take risks than girls (47.4% vs. 33.6%, $p < 0.01$). Although more needs to be learned about children's after-school risk-taking behaviours, it is clear that the pattern of risk-taking behaviour for younger children is different from that of older ones. Boys were more likely to take risks and are at greater risk of being involved in an accidental injury when they play outside after school than girls. Because many children do take risks after school, a broad and balanced approach combining educational and environmental components is essential to prevent after-school childhood accidents.

MJIRI, Vol. 13, No. 1, 19-26, 1999

Keywords: Injury, Children, Risk, Behaviour.

INTRODUCTION

Higher injury rates in older children and boys may have different reasons. The occurrence of injuries is known to be influenced by physical and socio-economic environmental factors as well as human behaviour.¹ In terms of children's behaviour, it has been found that problem behaviours such as over-activity and aggressive behaviours increase children's exposure to hazards and affect the rate of childhood injuries.^{2,3} Hargreaves and Davies (1993) pointed out that overall there are three aspects of individual differences that seem to have an influence upon risk-taking. The first is gender. The others are a proposed personality dimension of reflection-impulsive, and risk that may partly be learnt in the family by processes of imitation and identification. As children get older, they

experience an increasingly wide variety of unfamiliar situations, and so the range of potential risks to which they are exposed increases.⁴

There are some studies concerning risk-taking behaviour in relation to childhood injuries.²⁻⁷ An overall view on them shown that they are useful for providing information about, for example, pedestrian behaviour. However, none of these studies have shown differences in other activities on the road, and behavioural variations between different groups of children (by age and sex) have not been explored. It is unclear whether the behaviours defined as 'risky' have the same meaning for all children or for their parents. It is unknown which group of children take more risks or expose themselves to hazards within after-school hours, what are the main risky activities that children carry out within their after-school hours, what are the main reasons

Risky Activities in Children

for children's risk-taking behaviours, and what do parents think about their children's risk-taking behaviour. There is no study in the literature to explain children's risky activities and parent's opinions on children's risk-taking behaviour in seven and nine year old children during outside activities after-school. This study describes children's risky activities during outdoor activities after school and parent's responses to their children's risk-taking behaviour by age and sex.

METHODS

This study is epidemiological in design and method. The target groups for the study were children who were studying in elementary schools of Ahwaz, in the first and third grade (approximately seven and nine year old children) and their parents. Subjects were randomly selected. On the basis of sample size calculation ($\alpha=0.05$, $d=0.1$, $d=1.18$, $p=0.16$) and considering the response rates, about 450 individuals were needed. We approached nine elementary schools in different socio-economic areas that were randomly selected from 76 elementary schools. Using the random numbers, five elementary schools in less deprived areas and four schools in more deprived areas were randomly selected. All the selected schools cooperated. In total, 476 pupils (244 pupils in first grade and 232 pupils in third grade) were selected for the study. Of these, 471 pupils (251 boys and 220 girls) completed the questionnaires. Five children were not present on the date of collection of data and did not return to school until two weeks after data collection. On the same day 471 questionnaires were sent to the parents of the pupils and of these 416 (88.3%) were completed and returned. The children's questionnaire was self-completed and included drawings and simple questions.

The children were asked to paste different stickers on the pictures. Although it was a self-completion questionnaire, adult supervision took place. The inclusion criteria was a healthy child, aged seven or nine, who had to be a student in 1996. These age groups were chosen because earlier studies showed that they engage in the most in-street activities and are more at risk of after-school injuries compared to pre-school or junior high school children.⁵ The parents' questionnaire was also self-completed and was taken home to parents by the pupils from school and collected from pupils after completion. The data were analyzed with the statistical package SPSS for Windows (version 6.0). Chi-square tests were employed to test for differences and 95% confidence intervals were calculated for difference between two proportions. To determine the children's risky activities, the statistical significance of the differences between the responses using the Mann-Whitney U Wilcoxon rank W tests were calculated. To determine the children's overall risky activities, the children were divided into two groups. Children who carried out the risky activities scored two points, while those who had not carried out these activities scored one point. Children who scored equal or less than median (≤ 22) were considered as 'low risk' children, while those who scored more than median (>22) were considered to be 'high risk' children.

RESULTS

Why some children take risks when they are playing outside the home after school

Table I shows the parents' responses to the question of why some children take risks when they are playing outside after school. Overall, of 411 parents (response rate=98.8%)

Table I. Parents' responses to the question "Why some children take risks when they are playing outside after school" by age and sex.

	Age 7 (n=211)			Age 9 (n = 200)			Boys (n=212)			Girls (n=199)		
	Not important	Important	Very important	Not important	Important	Very important	Not important	Important	Very important	Not important	Important	Very important
Because they don't think of the danger	8 (3.8%)	55 (26.1%)	148 (70.1%)	19 (9.5%)	51 (25.5%)	130 (65.0%)	12 (5.7%)	53 (25.0%)	147 (69.3%)	15 (7.5%)	53 (26.6%)	131 (65.8%)
Because all the others do	20 (9.5%)	91 (43.1%)	100 (47.4%)	30 (15.0%)	82 (41.0%)	88 (44.0%)	24 (11.3%)	96 (45.3%)	92 (43.4%)	26 (13.1%)	77 (38.7%)	96 (48.2%)
Because someone makes them do it	49 (23.2%)	73 (34.6%)	89 (42.2%)	56 (28.0%)	65 (32.5%)	79 (39.5%)	54 (25.5%)	70 (33.0%)	88 (41.5%)	51 (25.6%)	68 (34.2%)	80 (40.2%)
As a dare	44 (20.9%)	87 (41.2%)	80 (37.9%)	46 (23.0%)	84 (42.0%)	70 (35.0%)	46 (21.7%)	92 (43.4%)	74 (34.9%)	44 (22.1%)	79 (39.7%)	76 (38.2%)
Because they don't get caught	47 (27.0%)	86 (40.8%)	68 (32.2%)	53 (26.5%)	80 (40.0%)	67 (33.5%)	57 (26.9%)	89 (42.0%)	66 (31.1%)	53 (26.6%)	77 (38.7%)	69 (34.7%)
For fun	40 (19.0%)	111 (52.6%)	60 (28.4%)	44 (22.0%)	107 (53.5%)	49 (24.5%)	38 (17.9%)	123 (58.0%)	51 (24.1%)	46 (23.1%)	95 (47.7%)	58 (29.1%)
Others (curiosity and stupidity) (n=2)		2			0			1			1 (50.0%)	

Table II. Parents' responses: risky activities that children do that might lead to an accident (percent).

	Age 7	Age 9	Boys	Girls	Total
Climbing walls	27.6	22.1	29.1	20.2	91(25.0%)
Climbing trees	13.5	16.3	18.4	10.7	54(14.8%)
Riding carelessly	10.4	18.0	15.3	12.5	51(14.0%)
Crossing busy roads	13.5	7.61	10.2	1.3	39(10.7%)
Riding too fast	10.4	9.3	11.7	7.7	36(9.9%)
Playing on busy roads	8.9	9.3	9.2	8.9	33(9.1%)
Crossing roads carelessly	6.3	9.6	7.7	7.7	28(7.7%)
Running on roads	8.9	4.1	6.1	7.1	24(6.6%)
Cycling without a helmet	3.6	5.2	2.6	6.5	16(4.4%)
Playing on the stairs	2.6	2.3	1.5	3.6	9(2.5%)
Cycling on busy roads	1.0	3.5	1.5	3.0	8(2.2%)
Roller skating on the roads	2.1	1.7	1.0	3.0	7(1.9%)
Throwing stones	1.0	1.7	1.5	1.2	5(1.4%)
Playing on building sites	2.1	0.0	1.5	0.6	4(1.1%)
Hanging windows	0.5	0.6	0.0	1.2	2(0.5%)
Copying movie characters	1.0	0.0	0.5	0.6	2(0.5%)
Total (n)	192	172	196	168	364*

* Some respondents had more than one answer to the question.

who responded to the question, most of them (93.4%) believed that children take risks because they do not think of the danger. About two-thirds of parents believed that the six statements in answer to the question are 'important' or 'very important' reasons for the children's risk-taking behaviours within after-school activities. There was no significant difference between the responses of parents to the statements with child's age and sex.

Risky activities that children carry out

Table II shows the parents' reports on risky activities that might lead to an accident by age and sex. Three hundred and sixty-four (87.5%) parents responded to this question. In total, parents reported that the top three risky activities were climbing walls (25%), climbing trees (14.8%), and riding carelessly (14.0%). Using 95% confidence intervals between proportions showed that there were significant differences between parents of older

children and younger ones when stating that their children ride carelessly (18.0% vs. 10.4%, 95% C.I., 0.4 to 15.0%) and their children play on building sites (2.1% vs. 0.0%, 95% C.I. 0.1% to 4.0%), and between parents of boys and girls when stating that their children climb walls (29.1% vs. 20.2%, 95% C.I., 0.5% to 18.0%) and climb trees (18.4% vs. 10.7%, 95% C. I., 0.5% to 15.0%). There were no significant differences between parents' views on other children's risky activities in terms of the child's age and sex.

Children's awareness of the risk of having an accident

Table III shows the parents' responses to the question "How would you describe your child's awareness of the risk of having an accident by age and sex." Of 416 parents who responded to the question, between 2.4% and 8.4% had no idea. Most parents believed that their children are easily distracted, take risks and follow the crowd anyway. In general, parents of older children were more likely to

Risky Activities in Children

Table III. Parents' responses to the question "How would you describe your child's awareness of the risk of having an accident" by age and sex (percent).

	Age 7	Age 9	Boys	Girls	Total
Careful (n=406)					
Always	11.7	12.9	5.3	19.8	50(12.3%)
Most of the time	57.7	68.4	62.7	62.9	255(62.8%)
Sometimes	27.7	16.6	30.1	14.2	91(22.4%)
Rarely	1.9	0.5	1.0	1.5	5(1.2%)
Never	0.9	1.6	1.0	1.5	5(1.2%)
Alert (n=397)					
Always	8.7	14.2	5.4	17.8	45(11.4%)
Most of the time	56.8	55.3	53.7	58.6	223(56.2%)
Sometimes	27.7	26.8	34.1	19.9	108(27.3%)
Rarely	6.3	3.7	6.3	3.7	20(5.1%)
Never	0.5	0.0	0.5	0.0	1(0.3%)
Safety conscious (n=402)					
Always	9.5	13.0	7.2	15.5	45(11.2%)
Most of the time	50.0	52.1	47.6	54.6	205(51.0%)
Sometimes	30.5	31.3	37.0	24.2	124(30.8%)
Rarely	8.6	2.6	6.7	4.6	23(5.7%)
Never	1.4	1.0	1.4	1.0	5(1.2%)
Easily distracted (n=403)					
Always	8.7	9.2	10.0	7.7	36(8.9%)
Most of the time	19.7	10.3	15.3	14.9	61(15.1%)
Sometimes	57.2	56.4	61.7	51.5	229(56.8%)
Rarely	13.9	22.1	12.9	23.2	72(17.9%)
Never	0.5	2.1	0.0	2.6	5(1.2%)
Follows the crowd (n=381)					
Always	8.9	4.4	7.9	5.6	26(6.8%)
Most of the time	8.9	12.8	12.4	8.9	41(10.8%)
Sometimes	49.8	37.2	48.8	38.3	167(43.8%)
Rarely	21.4	28.9	20.9	29.4	95(24.9%)
Never	10.9	16.7	10.0	17.8	52(13.6%)
Take risks (n=392)					
Always	1.5	4.2	2.9	2.7	11(2.8%)
Most of the time	9.4	3.7	8.8	4.3	26(6.6%)
Sometimes	36.0	39.7	44.6	30.3	148(37.8%)
Rarely	45.3	40.2	38.7	47.3	168(42.9%)
Never	7.9	12.2	4.9	15.4	39(9.9%)

respond that their children were careful ($p=0.023$) than parents of younger children. In contrast, parents of younger children were more likely to respond that their children were easily distracted ($p=0.008$) and follow the crowd ($p=0.026$) than parents of older children. There was no significant difference between the two groups of parents relating to other responses. Parents of girls compared to parents of boys were more likely to respond that their children are careful, alert, and safety conscious ($p<0.001$). However, parents of boys were more likely to respond that their children are easily distracted ($p=0.015$), take risks and follow the crowd ($p=0.001$).

Children activities in the week prior to data collection

Table IV shows the children's activities in the week prior to data collection. Of 471 children, about half or more of them had some types of activities such as cycling and playing in the streets in the week prior to data collection. Apart from these activities, the top three risky activities that children carried out were climbing trees, crossing busy roads with friends and cycling without a helmet. Younger children were more commonly found to cycle doubling two on a bike ($p=0.06$) and play on a busy road ($p=0.042$) than older children in the week prior to data collection. In contrast, older children were more likely to cross busy

Table IV. Children's responses-Children's activities in the week prior to data collection (percent).

	Age 7	Age 9	Boys	Girls	Total
Cycling on the pavement	62.0	61.6	58.2	65.9	291(61.8%)
Cycling in the street	59.1	62.9	62.9	58.6	287(60.9%)
Cycling without a helmet	45.5	42.4	42.6	45.5	207(43.9%)
Cycling two on a bike	28.1	17.5	26.7	18.6	108(22.9%)
Cycling on busy roads	12.0	7.9	12.4	7.3	47(10.0%)
Crossing busy roads with friends	38.8	50.2	45.0	43.6	209(44.4%)
Crossing between parked cars on the road	29.3	27.5	31.5	25.0	134(28.5%)
Crossing busy roads alone	20.2	31.9	32.3	18.6	122(25.9%)
Crossing busy roads without regarding the traffic lights	23.6	24.0	24.3	23.2	112(23.8%)
Running on roads	12.8	11.8	14.3	10.0	58(12.3%)
Playing in the street	73.1	82.1	74.9	80.5	365(77.5%)
Playing near old (dilapidated) buildings	18.2	18.3	20.7	15.5	86(18.3%)
Playing on buildings sites	10.7	8.3	10.0	9.1	45(9.6%)
Playing on busy roads	9.1	4.4	8.8	4.5	32(6.8%)
Playing near the railway	4.1	4.8	5.2	3.6	21(4.5%)
Climbing trees	48.8	51.5	61.0	37.7	236(50.1%)
Climbing walls	38.0	42.4	47.0	32.3	189(40.1%)
Climbing buildings	12.8	13.1	18.3	6.8	61(13.0%)
Total (n)	242	229	251	220	471

roads alone ($p=0.04$), cross busy roads with friends ($p=0.013$) and play in the street ($p=0.020$) than younger children. There were no significant differences between younger and older children relating to other activities in the week prior to data collection. Boys compared to girls were more likely to cross a busy road alone, climb trees, climb walls, climb up buildings ($p<0.001$), and cycle two on a bike ($p=0.038$). In contrast, girls were more likely to play in the streets ($p<0.001$) than boys. There were no significant differences between boys and girls relating to other activities.

Children's overall risky activities

Using the chi-square tests on an aggregate score of risky activities for 'low risk' children who scored less than

median (22 or less) compared to 'high risk' children who scored more than median (more than 22), showed that boys were more likely to take risks than girls (47.4% vs. 33.6% $p=0.02$). There were no significant differences between younger and older children (41.0% vs. 40.9%) relating to the overall risky activities.

DISCUSSION

Most parents in this study reported that their children take risks when they play outside after school. The top three risky activities were climbing walls, climbing trees, and riding carelessly. Most parents believed that children take risks because they do not think of the danger. Older

Risky Activities in Children

children and boys compared to younger children and girls were more likely to take risks. For example, boys were more likely to cycle two on a bike, climb trees, climb walls and climb buildings than girls.

The use of a diary method of recording actual risk incidents can be done to determine the pattern and occurrence of risk incidents.⁶ Children can provide valid self-reports of their own willingness to take physical risks.⁷ Results of the children's risky activities may be considered as a general view on children's risky behaviours and not of how children actually always behave in practice. This study is limited by the exclusion of children's abnormal behaviour such as aggressiveness and impulsiveness. The problem of biased recall of behaviour after one week is another limitation of this study. In this study the children's ability to cope with hazards is unknown. According to the literature,⁸ it is assumed that some activities should be hazardous for children up to the age of 9. Obviously, different outdoor activities are not equally dangerous, so aggregation of responses are not justified. In addition, exposure is a major factor influencing the distribution of accidental injuries and perhaps the results of this study. For example, some children may have owned and ridden more bicycles than others which would create an error in the risk-taking differences. Also, bike borrowing as another factor in the injury events was not considered. Although boys in the aggregate have increased risk of injury, prediction at the individual level is inaccurate.⁹ The present study is limited by the fact that risk-taking interpretation by self-reported questionnaires using simple questions is not enough for understanding children's risk-taking behaviours. It is not clear whether the behaviours defined as 'risky' have the same meaning for different groups of parents and whether the child's behaviour itself was abnormal or not. For example crossing a busy road without an adult has been defined as risky behaviour for under 9 year old children,¹⁰ but some parents may not consider this activity as a risky behaviour.

No direct evidence was found to compare with this study. In studies addressing fall from heights, it has been shown that after the age of 5, children are more likely to fall from trees, roofs and ladders.¹¹ It has been found that for bicycle injuries, human factors such as horseplay, stunts and imitative behaviour, riding double, and use of the wrong size bicycle are important causes of injuries.¹² A large proportion of bicycle injuries amongst children result from riding double, borrowing bikes, speeding downhill and so forth.¹³ Another study showed that about half of cyclists were behaving incorrectly at the time of an accident and cyclists under 16 years of age are less likely to observe rules than those over 16.¹⁴ McCarthy¹⁵ pointed out that the existing studies cannot exclude the possibility of different risk-taking behaviour by cyclists who are helmet wearers compared with non-wearers. Wearing of helmets by cyclists

has been recommended and cycling without a helmet has been considered as a risky behaviour.¹⁶⁻¹⁸ The use of bicycle helmets has increased over the years.^{19,20} Cushman et al.¹⁹ found that in 1991, 32.5% of children in Ottawa were wearing helmets compared to 10.7% in 1988. Weiss²⁰ determined the prevalence rate of helmet use by children in Arizona as 17.1% in 1990. Some studies have shown that elementary school children are unlikely to use bicycle helmets.^{21,22}

Variations in children's behaviour by sex in this study are similar to previous literature citing differences in behaviour elements on crossing roads. West et al.²³ found that male children were more knowledgeable about road safety, but were more likely to engage in potentially dangerous behaviour when outside than were female children. According to their findings, there was evidence of strong sex differences concerning road safety knowledge and behaviour. Girls showed a greater tendency to behave in ways that may be considered safe. Ginsburg and Miller²⁴ reported that more 3 to 11 year old boys than girls engaged in risky behaviour. A British study on behavioural predictors of injury in children between ages 5 and 10 years, using parental questionnaire, indicated that levels of aggression and over-activity are higher in boys.³ Jaquess and Finney²⁵ found a significant relationship between being a boy and hyperactivity. The Scottish Development Department in a study on children aged 3-14 and their behaviour when crossing roads showed that of children involved in injuries, many had selected an unsafe place to cross, more than a half crossed without looking and nearly a half had been running. In almost every aspect boys behaved less safely than girls.²⁶

To our knowledge, earlier studies have not explored why children take risks. In this study most parents believed that children take risks because they do not think of the danger. Among young adolescents it has been found that behaviours defined by adults as risky do not have the same meaning for young people.²⁷ A similar explanation can be presented for the children's risk-taking behaviours. Some studies explained that children's injuries arise primarily because children do not know how to behave, rather than because they choose not to behave in a skilled way.²⁸ However, some other studies found that the increased risk of injuries in boys may be due to certain behavioural characteristics,⁹ and children who are extremely aggressive, very hostile, hyperactive, very self-confident, or extremely impulsive were significantly over-presented in the accident repeater groups.² Ball et al.²⁹ who studied playground injuries in the UK, believed that a significant proportion of injuries arise as a result of the behaviour of children, including overt misuse of facilities and dangerous activities. Thomson et al.²⁸ found that there is a tendency of risk-taking behaviour in some groups of children. Parents have different responses to children in unsafe situations. Research in the area of parent-child interactions has indicated that

parents' style of responding to children influences children's behaviour.³⁰

This study showed that older children and boys compared to younger ones and girls were more likely to cross a busy road without an adult. Russam³¹ in a study on the psychology of children in traffic found that 85% of children (5-9 years) were running on the roads at the time of accidents. In this study the proportion of children who had been running on the roads (12.3%) was much less. This might be because of different methods of data collection or because of changing children's behaviour over the years. Older children are less likely to be supervised and may be influenced by their peers to take risks.²⁶ These might be some possible explanations for higher risk-taking behaviour in older children. However, there is a dearth in evidence in terms of this issue.

In conclusion, results of this study clearly showed potentially riskier behaviour in boys compared to girls, and showed that the pattern of risk-taking behaviour for younger children was different than that for older ones. This might be one of the most important explanations for the variations among children's risky activities and their injuries. More needs to be learned about children's after-school risk-taking behaviour.

As a final recommendation of this study, because a majority of children do take risks in their outdoor activities anyway, a broad and balanced approach, combining educational and environmental components is essential to prevent children's outdoor injuries.

REFERENCES

- Schor EL: Unintentional injuries. Patterns within families. *American Journal of Diseases of Children* 141: 1280-4, 1987.
- Manheimer DI, Mellinger GD: Personality characteristics of the child accident repeater. *Child Development* 38: 491-513, 1967.
- Bijur P, Golding J, Haslum M, Kurzon M: Behavioural predictors of injury in school-age children. *American Journal of Diseases of Children* 142: 1307-12, 1988.
- Hargreaves D, Davies G: Children's risk-taking: developmental and environmental perspectives. University of Leicester, 1993.
- Chapman AJ, Foot HC, Wade FM: Children at play. In: Osborne DJ, Levis JA, (eds.), *Human Factors in Transport Research*. London: Academic Press, pp. 380-387, 1980.
- Sparks G, Craven M, Worth C: Injury control and risk-taking in young adolescents. *Third International Conference on Injury Prevention & Control*. Australia, 1996.
- Potts R, Martinez IG, Dedmon A: Childhood risk taking and injury: self-report and informant measures [see comments]. *Journal of Pediatric Psychology* 20: 5-12, 1995.
- Avery J, Jackson R: *Children and Their Accidents*. London: Arnold Edward, 1993.
- Grossman D, Rivara F: Injury control in childhood. *Pediatric Clinics of North America* 39: 471-85, 1992.
- Sandels S: *Children in Traffic*. (Revised ed.). London. Elek Books Ltd., pp. 22-57, 1975.
- Garrettson LK, Gallagher SS: Falls in children and youth. Study of falls by the three injury prevention demonstration projects. *Pediatric Clinics of North America* 32: 153-161, 1985.
- Greensher J: Prevention of childhood injuries. *Pediatrics* 74: 970-5, 1984.
- Waller J: Bicycle ownership use and injury patterns among elementary school children. *Pediatrics* 47: 1042-50, 1971.
- Breeze RH, Southall D: The behaviour of teenage cyclists at T-junctions. London: AA Foundation for Road Safety Research, pp. 4-25, 1990.
- McCarthy M: Pedal cyclists, crash helmets and risk. *Public Health* 105: 327-34, 1991.
- Bull JP: Cyclists need helmets. *BMJ* 296: 1144, 1988.
- Rodgers J: The effectiveness of helmets in reducing all-terrain vehicle injuries and deaths. *Accid Anal Prev* 22: 47-58, 1990.
- Thomas S, Acton C, Nixon J, Battistutta D, Pitt WR, Clark R: Effectiveness of bicycle helmets in preventing head injury in children: case-control study [see comments]. *BMJ* 308: 173-6, 1994.
- Cushman R, Pless R, Hope D, Jenkins C: Trends in bicycle helmet use in Ottawa from 1988 to 1991. *Canadian Medical Association Journal* 146: 1581-5, 1992.
- Weiss BD: Trends in bicycle helmet use by children: 1985 to 1990. *Pediatrics* 89: 78-80, 1992.
- Flisher AJ, Ziervogel CF, Chalton DO, Leger PH, Robertson BA: Risk-taking behaviour of Cape Peninsula high-school students. Part VI. Road-related behaviour. *South African Medical Journal* 83: 486-90, 1993.
- Seijts GH, Kok G, Bouter LM, Klip HA: Barriers to wearing bicycle safety helmets in The Netherlands. *Archives of Pediatrics & Adolescent Medicine* 149: 174-80, 1995.
- West R, Sammons P, West A: Effects of a traffic club on road safety knowledge and self-reported behaviour of young children and their parents. *Accid Anal Prev* 25: 609-618, 1993.
- Ginsburg H, Miller S: Sex differences in children's risk-taking behaviour. *Child Development* 53: 426-28, 1982.
- Jaques DL, Finney JW: Previous injuries and behavior problems predict children's injuries. *J Pediatric Psychology* 19: 79-89, 1994.
- Johnson R: *Children and Road: A Safer Way*. London: The Department of Transport, pp. 2-20, 1990.
- Alexander CS, Kim YJ, Ensminger M, Johnson KE, Smith BJ, Dolan LJ: A measure of risk-taking for young adolescents: reliability and validity assessments. *J. Youth*

Risky Activities in Children

- Adolescence 19: 559-69, 1990.
28. Thomson J: The facts about child pedestrian accidents. London: Cassell Educational Limited, 1991.
29. Ball D, King K: Playground injuries. A scientific appraisal of popular concerns. J Roy Soc Health 111: 134-37, 1991.
30. Coppens NM: Parental responses to children in unsafe situations. Pediatric Nursing 16: 571-74, 1990.
31. Russam K: The psychology of children in traffic. In: Jackson RH, (ed.) Children, The Environment and Accidents. London: Pitman Medical Publishing Co. Ltd, 1977.