

Child Safety in the Home: Mothers' Perception of Dangers to Young Children

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Summary

A basic task of research on child safety in the home is the identification of dangers so that protective measures can be implemented. An additional important focus of research is to disentangle the factors that affect parents' ability, willingness, and persistence in safeguarding their children. To investigate the role which perceptions of accident risks play for parents' protective actions, home interviews were conducted with 72 mothers of 1, 2 and 3-year-old children of both sexes. The results show that kitchen and bathroom are perceived as more dangerous than other rooms, partly based on own direct experiences, partly based on experiences gained from indirect sources. Supervision and safety measures are also perceived as more needed in these rooms. Both perceived risk and need for supervision and safety measures are furthermore found to decrease with increasing age of the child, but only slight effects of its sex are observed.

Résumé

La tâche essentielle de la recherche sur la sécurité de l'enfant à la maison est l'identification des dangers, ceci afin que des mesures de protection puissent être prises. Une tâche additionnelle de la recherche est de préciser les facteurs qui influencent l'habileté, la volonté ou le désir continu des parents de préserver leurs enfants des dangers. Pour investiguer le rôle que la perception des risques d'accidents joue par rapport aux initiatives de protection prises par les parents, nous avons mené des entretiens avec 72 mères d'enfants, garçons et filles, âgés de 1 à 3 ans.

Les résultats indiquent que la cuisine et la salle de bains sont perçues comme étant plus dangereuses que les autres pièces. Cette évaluation est en partie basée sur la propre expérience des mères interrogées, et en partie sur une expérience acquise grâce à des sources indirectes.

Le besoin de supervision et de mesures de sécurité est aussi ressenti comme plus nécessaire dans ces pièces. Par ailleurs, tant le risque perçu que le besoin de supervision et les mesures de sécurité sont ressentis comme décroissants avec l'âge des enfants, avec des différences mineures seulement selon le sexe de ces derniers.

1. Introduction

The most serious threat to young children's health and welfare in Western societies is accidental injuries in the home between the ages of 1 and 3 years (Baker, O'Neill & Karpf, 1984). In the so-called structural approach to the prevention of childhood accidents (Roberts & Brooks, 1987), a primary problem for the research is the identification of dangers which the child encounters in his or her environment. A number of safety measures to be undertaken in the home have been suggested on the basis of such research.

One disadvantage of the structural approach is its tendency to underrate the important role parents play, at least in the protection of young children. For instance, the implementation of safety measures in the home is sometimes dependent on the parents' initiative, and the maintenance of such measures, once implemented, is almost always the parents' responsibility. Viewed from this perspective, parents' knowledge of accident risks and of preventive measures, as well as what other factors affect parents' ability, willingness, and persistence in undertaking such measures, become an additional important research focus (T. Gärling, 1985; T. Gärling & Valsiner, 1985).

Parents who are caretakers of children, in particular of children when they become mobile at around 1 year of age, are likely to learn about the dangers the children encounter in the home (Bacon & Ashmore, 1986). An important function of such learning should be to inform about where to act to safeguard the child's safety (Bell & Harper, 1977; Bell & Chapman, 1986; Valsiner, 1985), for instance, by supervising and by structuring the environment (T. Gärling & A. Gärling, 1988).

A primary aim of the present study was to investigate mothers' perceptions of dangers for their children in the home, and how these perceptions change when the children grow older. An important question to ask relative to this aim is what basis mothers have for their perception of risk. Risk perceptions in different contexts have been found to rely on the application of various judgemental heuristics (Slovic, Fischhoff & Lichtenstein, 1982; Kahneman & Tversky, 1973). One such heuristic is the simulation heuristic (Kahneman & Tversky, 1982), and, like parents have been assumed to do when perceiving the riskiness of accident-prone events (T. Gärling, A. Gärling & Valsiner, 1987; T. Gärling, Svensson-Gärling & Valsiner, 1984), it may be assumed that mothers evaluate the accident risk in different places by mentally simulating accident-prone events which they believe can occur in these places. Perceptions of risk may then be based on the number of such mentally simulated events. This raises the further question of whether these events are all accidents or near-accidents which mothers have directly experienced, or if they consist of a mixture of directly experienced, recalled events and not directly experienced, constructed events, based on information acquired from the mass media and similar sources.

Data were collected by means of home interviews in which mothers of 1, 2 and 3-year-old boys and girls were asked to rate how likely they believed their unsupervised child was to have an accident in the kitchen, the bathroom, the living room, and the child's bedroom. The mothers were also asked each time to recall accidents and near-

accidents¹ they had experienced recently and to indicate what accidents they believed could occur. Because accidents with more serious outcomes will probably be remembered better if they have occurred and will be attended more and remembered better when encountered from indirect sources, it was hypothesized that the kitchen and the bathroom, where more serious accidents occur, would be perceived as more risky than the living room and the child's bedroom. Furthermore, because mothers of younger children and of boys should have experienced more accidents, perceived risk was expected to decrease with increasing age of the child and boys were expected to be perceived as more accident-prone than girls.

Another aim was to investigate the relationship between, on the one hand, mothers' perceptions of accident risks in the home and, on the other hand, protective actions mothers perceive as important to undertake. Different such actions, such as supervising the child and structuring the environment for him or her, have been assumed to be mediated by risk perceptions (T. Gärling & A. Gärling, 1988). In the present interviews, the mothers were asked to rate the extent to which they would permit the child to play alone in different rooms. These ratings were assumed to reflect the need mothers felt of supervising the child, and they were expected to show a relationship with the ratings of accident risks in different rooms.

A final set of questions concerned safety measures. Implementing safety measures is a way of structuring the environment to make it safe for children. However, many safety measures are implemented without parents playing an active role. Therefore, the interviews assessed how instrumental the mothers perceived a particular safety measure to be, whether or not it had been implemented, in safeguarding the children from accidental injuries. It was expected that safety measures implemented in rooms perceived as more dangerous would be perceived as more instrumental.

2. Method

2.1. Sample

First-born children living in Umeå, Sweden, were randomly sampled. Seventy-two (91.1%) of their mothers agreed to be interviewed. The children belonged to three equally large groups, children who at the time of the interview were 1, 2 and 3 years old (± 2 months), respectively. Half of the children in each group were boys, half were girls. Of all the children, 64 (88.9%) lived in intact families. Seventeen 2 and 3-year olds had a younger sibling. In 45 (62.5%) families at least one parent had a university degree. The mothers were between 21 and 39 years old (mean 28.9 years). Forty-six (63.8%) mothers, with 12, 17 and 17 of the 1, 2, and 3-year-old children, respectively, worked weekly from 10 to 40 hours outside the home.

¹ Unless otherwise clear from the context, when accidents are mentioned in the following, this will include such events, usually called near-accidents, which as opposed to accidents did not cause injury but which very likely could have done so.

2.2. Interviews

The mothers first received by mail a one-page letter in which they were asked to participate in a study of children's housing needs. They were called a few days later and an appointment was made for the interview.

The interviews, which took approximately 1 hour, were conducted in the mothers' homes. All questions were read by an interviewer (E.M.-S.) from a written form. The subjects replied orally, and their replies were recorded. Before conducting the first interview, a number of pilot interviews were run in the presence of another person (A.G.) who made independent recordings. These pilot interviews were concluded when the interviewer and the other person were found to be in complete agreement. In the first and last following six interviews, as well as in the six interviews in the middle of the sequence, the interviewer was furthermore accompanied by that other person. Agreement was found to be almost perfect in all these interviews.

The questions concerned several different topics. After some background questions about the home, the mother, and the child, questions were asked about what the mothers perceived as desirable behaviours by the child in the kitchen, the bathroom, the living room, the parents' bedroom (which sometimes was also the child's bedroom), and the child's bedroom if he or she had one of his or her own. Of particular interest was to what extent the mothers perceived it as desirable that the child played alone. Mothers indicated this on a rating scale with five verbally defined steps ranging from absolutely not to very desirable. The order between the rooms was randomized for each mother.

The topic of accidents was then introduced. For each of the rooms presented in another random order, the mothers were first asked to recall recent events when the child either had been injured, or when this easily could have occurred. Then the mothers were requested to rate the risk that the child would accidentally be injured when being alone. These assessments were made on a scale with five verbally defined steps ranging from no risk to very high risk. Finally, the mothers were asked to explain why they rated the risk as they did by indicating how they believed the child could be injured.

Questions were asked in a final section about different safety measures. These questions were similar for the different rooms. The mothers were first asked whether the specified safety measure was implemented, then they indicated to which extent it was perceived to be instrumental for preventing the child from being injured. Responses were given on a scale with five verbally defined steps ranging from certainly not to certainly instrumental. The different safety measures were chosen to be representative of each room. As Table 1 shows, there were four measures which were the same for three of the rooms (kitchen, living room, and child's bedroom), another two which were the same for the living room and the child's bedroom, whereas all the remaining measures were specific for one room. All questions about one room were asked before the interviewer proceeded to questions about another room. The order between the questions for each room, as well as the order between the rooms were randomly determined.

Table 1: Safety measures about which mothers of 1, 2, and 3-year-old children were questioned

Electric outlets have poke-safety mechanisms¹
 Strings of Venetian blinds are secured out of reach of child¹
 Windows are fastened¹
 Sharp corners are protected¹
 Cooker has top-guard²
 Oven door has safety opening mechanism²
 Oven has extra safety glass²
 Cooker is secured to wall²
 Kitchen drawers have safety opening mechanisms²
 Cleaning agents are stored out of reach of child²
 Medicine is stored out of reach of child²
 Child's high chair is secured to table²
 Nappy-changing place has safety sides³
 Child uses potty with anti-tip guard³
 Bath tub has anti-slip mat³
 Warm water tap in bath tub is equipped with thermostat³
 Shelves are secured to walls⁴
 Things child can reach have been removed from shelves⁴
 Child's bed has safety sideboards⁵
 Bedside lamp is out of reach from child's bed⁵
 Floor beside child's bed is kept free from toys⁵
 Bed is kept free from toys when child is asleep⁵

¹ Questions about these measures were asked for the kitchen, the living room, and the child's bedroom.

² Questions asked for the kitchen.

³ Questions asked for the bathroom.

⁴ Questions asked for the living room and the child's bedroom.

Table 1: Safety measures about which mothers of 1, 2 and 3-year-old children were questioned

Mesures de sécurité au sujet desquelles les mères d'enfants âgés de 1, 2 et 3 ans ont été interrogées

3. Results

3.1. Accident Statistics

Some information about what kinds of injuries children at the ages of 1, 2 and 3 years (± 2 months) suffer in the home was obtained from records of emergencies treated at the regional hospital in Umeå. A total of 76 children, 16 1-year olds, 33 2-year olds, and 27 3-year olds, were admitted during one year (the year preceding the interviews). Fig. 1 shows that at all ages more boys than girls were injured. Most injuries occurred in the living room, next most in the kitchen, second next most in the bedroom, and least in the bathroom. Falls on the same or from a higher level were the most common type of injury-causing event for all rooms (accounting for from 57% to 72% of all such events in different rooms).

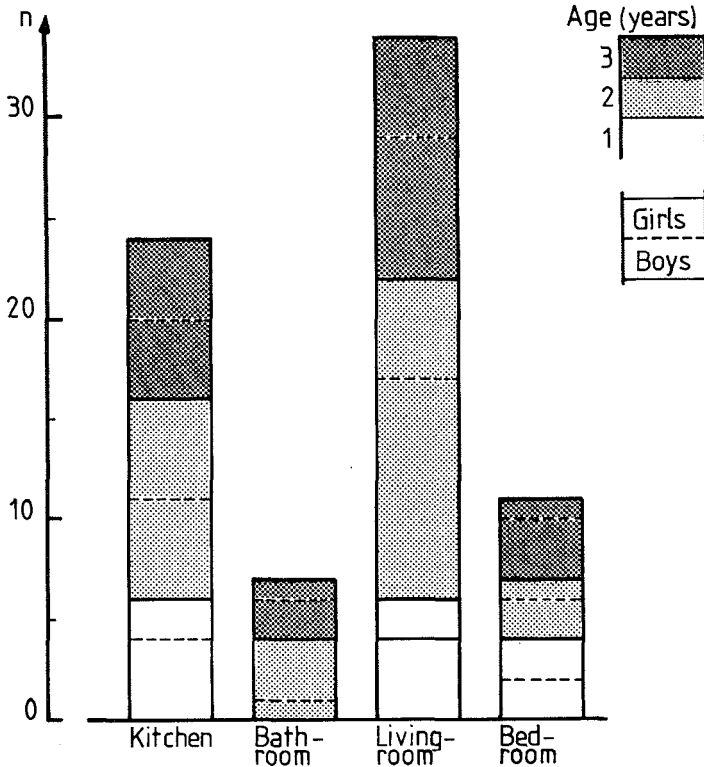


Fig. 1 Number of injuries in different rooms to 1, 2, and 3-year-old children of both sexes
 Nombres de blessures par pièces chez des enfants de 1, 2 et 3 ans des deux sexes

3.2. Perception of Accident Risks

Table 2 shows how many accidents mothers of 1, 2 and 3-year-old children recalled had occurred in different rooms, how many accidents they believed could occur, and how likely they rated accidents. An analysis of variance (age by sex by room) on each dependent variable yielded effects involving age and sex which, with some exception, were only nearly significant ($p < .10$). The mothers were on average able to recall less than one accident, but slightly more were recalled by mothers of the younger than by mothers of the older children, $F(2.66) = 2.58$, $p < .10$. This age trend was paralleled by a similar trend for the ratings, $F(2.66) = 2.34$, $p < .10$. Mothers furthermore believed that more accidents could occur than they recalled had occurred.

All the effects of room were highly significant, $F(3.162) = 8.62$, 17.75, and 38.95, $p < .001$, on accidents recalled, accidents believed to occur, and the ratings, respectively. Tukey post hoc tests indicated that several of the differences shown in Table 2 were reliable for $p < .05$. The kitchen and the bathroom were rated as reliably more dangerous than the living room and the child's bedroom, reliably more accidents were also believed to occur in these rooms, and reliably more accidents were recalled to have occurred in the kitchen than in the other rooms.

Table 2: Mean number of recalled accidents/near accidents, mean number of accidents believed to occur, and mean ratings of accident risks in different rooms obtained from interviews with mothers of 1-year, 2-year, and 3-year-old children.											
Kitchen			Bathroom			Living room			Bedroom ¹		
Age (years)			Age (years)			Age (years)			Age (years)		
1	2	3	1	2	3	1	2	3	1	2	3
Number of recalled accidents/near accidents											
0.8	0.8	0.6	0.5	0.5	0.3	0.6	0.5	0.3	0.5	0.2	0.2
Number of accidents believed to occur											
1.8	2.5	2.3	1.0	2.1	2.1	1.8	1.9	1.3	1.1	1.4	1.2
Ratings of accident risks											
3.2	3.2	3.3	3.7	3.6	3.4	2.9	2.3	2.2	2.6	2.0	2.0
¹ Fifteen 1-year-olds, six 2-year-olds, and three 3-year-olds slept in parents' bedroom; the others had a bedroom of their own.											

Table 2 Mean number of recalled accidents/near accidents, mean number of accidents believed to occur and of accident risks.

Nombre moyen d'accidents rappelés ou de presqu'accidents, nombre moyen d'accidents supputés et de risques d'accidents.

The three-way interactions involving room, age, and sex were also significant or almost significant, $F(6.198) = 1.56, p < .20, 3.18, p < .01,$ and $1.91, p < .10.$ All the measures suggested that, for the rooms which were more dangerous, the risk decreased across age for girls but not for boys.

3.3. Perceived Need of Supervising the Child

Table 3 shows mean ratings of how desirable mothers perceived that the child played alone in different rooms. An analysis of variance yielded highly significant age differences, $F(2.66) = 12.09, p < .001.$ as well as highly significant differences between the rooms, $F(3.198) = 50.67, p < .001.$ Tukey post hoc tests showed for $p < .05$ that it was reliably less desirable that the 1-year-old children played alone than the other children. Playing alone in the bathroom was furthermore reliably less desirable than in the other rooms.

Table 3: Mean ratings of how desirable playing alone in different rooms was perceived by mothers of 1-year, 2-year, and 3-year-old children.

Kitchen			Bathroom			Living room			Bedroom		
Age (years)			Age (years)			Age (years)			Age (years)		
1	2	3	1	2	3	1	2	3	1	2	3
2.7	3.5	3.8	1.5	2.1	2.1	2.8	3.8	3.3	3.0	4.0	4.4

Table 3 Mean ratings of desirability of children playing alone.
Evaluation moyenne du degré de désirabilité que l'enfant joue seul.

3.4. Perceived Need of Structuring the Environment

Table 4 indicates that in most homes electric outlets had poke-safety mechanisms and windows were fastened. Almost all mothers furthermore said that they kept the floor beside the child's bed free from toys at night time, but fewer that they kept the bed free from toys. A number of safety measures were, with few exceptions, undertaken in the kitchen: the cooker was secured to the wall; the over door had an extra safety glass and a safety opening mechanism; medicines were kept out of reach. However, cleaning agents and kitchen utensils were less frequently kept out of reach. The cooker had a top guard only in relatively few cases. Whether or not some of the measures were undertaken depended on the age of the child. This was true of safety sideboards attached to the child's bed, as well as of keeping the bedside lamp out of reach. Both measures were frequent for 1 and 2-year olds only. By contrast, securing strings on Venetian blinds out of reach and removing things from shelves out of reach were less frequent but, still, more frequent for 1 and 2-year olds. Finally, some measures were hardly ever undertaken: sharp corners were almost never protected, high chairs were almost never secured to the table, and bookshelves were almost never secured to the wall.

Table 4 also suggests that whether a safety measure is implemented in the home is related to the extent to which the measure is perceived by the mothers as instrumental to the child's protection. Analyses of variance on the ratings of the safety measures, regardless of in which room they were implemented, showed that there were reliable age differences, $F(2,66) = 8.50$, $p < .001$, reliable differences between the different measures, $F(31,2046) = 42.07$, $p < .001$, and a weak but highly significant interaction between age and measure, $F(62,2046) = 2.35$, $p < .001$. Overall, mothers of the younger children rated the safety measures as being more instrumental than the mothers of the older children did. This age trend was present in varying degrees for most safety measures. Exceptions were constituted by measures which were rated as equally instrumental independently of the child's age, namely that the oven had a safety glass, that the cooker was secured to the wall, that cleaning agents and medicines were kept out of reach, and that the bath tub was equipped with an anti-slip mat. Some measures

were rated as not very instrumental at any age. That sharp corners are protected, that the child's high chair in the kitchen is secured to the table, that shelves are secured to the wall in the living room (but not in the child's bedroom), that things are removed from shelves in the child's bedroom (but not in the living room), and that the child's bed and the floor beside are kept free from toys, belonged to this group.

Table 4. Percent homes in which safety measures were implemented, and mean ratings of how instrumental for the protection of the children each safety measure was perceived by mothers of 1, 2, and 3-year-old children.

Safety measures	Kitchen						Bathroom						Living room						Bedroom						
	1 year		2 years		3 years		1 year		2 years		3 years		1 year		2 years		3 years		1 year		2 years		3 years		
	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	
Electric outlets	91	4.9	88	5.0	83	4.5																			
Venetian blinds	67	3.8	22	3.3	8	2.5																			
Windows fastened	91	4.1	95	3.8	90	3.5																			
Sharp corners	25	2.9	0	2.1	4	1.8																			
Top-guard	45	4.4	75	4.3	50	3.6																			
Oven door	92	5.0	92	4.8	88	4.3																			
Oven glass	88	4.8	86	4.8	96	4.9																			
Cocker secured	71	4.5	75	4.5	83	4.3																			
Kitchen drawers	42	3.6	63	3.7	46	3.2																			
Cleaning agents	62	4.3	75	4.7	70	4.3																			
Medicin	100	5.0	100	4.8	96	4.9																			
Chair secured	0	1.9	4	1.5	0	1.6																			
Nappy-changing							89	4.2	82	4.0	—	3.8													
Potty							94	4.6	100	4.2	74	2.8													
Bath tub							54	4.6	79	4.6	62	4.5													
Thermostat							58	4.5	46	4.1	50	4.1													
Shelves secured													13	2.6	13	2.4	21	2.8	10	3.7	18	3.4	35	3.8	
Things removed													69	3.8	50	3.0	38	2.3	38	2.6	12	1.6	13	1.5	
Safety sideboards																									
Bedside lamp																									
Toys on floor																									
Toys in bed																									

The percentages were based on the number of homes in which the particular safety measure was relevant. With one exception where no percentage was calculated because there were only 2 observations, this number varied between 12 and 24.

By averaging across all the safety measures in each room, more safety measures were found to be implemented and to be rated as more instrumental in the kitchen and the bathroom than in the living room and the child's bedroom. An analysis of variance on the ratings of instrumentality yielded a highly significant effect of room, $F(3.198) = 16.82, p < .001$. Tukey post hoc tests showed that the difference between, on the one hand, the kitchen and the bathroom and, on the other hand, the living room and the child's bedroom were reliable.

4. Discussion

A basic finding was that mothers perceived different accident risks to their children in the home. Thus, in some way mothers acquire a cognitive representation of dangers for the children in their environments, exactly as suggested by Bacon and Ashmore (1986). More specifically, mothers were found to believe that kitchen and bathroom are more dangerous than other rooms in the home. Accident statistics, however, did not suggest that this is necessarily so, but interpretation of differences in injury frequencies between different rooms need to be made more cautiously due to the limited material and to the need to take into account how much time is spent in each room. A more valid comparison is that between children of different age and sex. In this case clear differences in injury frequency between boys and girls corresponded to only slight differences in the mothers' risk perceptions, whereas smaller or no differences related to age corresponded to larger differences in perception. It is thus suggested that mothers may, to some extent, misperceive the actual risk. In order to differentiate the picture, it should also be noted that falls were most frequently mentioned by the mothers as accidents which they believed could occur in the home. This appeared to be in agreement with actual injury figures.

The ratings of accident risk obtained from the mothers were related to the number of accidents which were perceived could occur, although the relationship was not perfect. It is interesting, then, that accidents perceived to occur consisted of both such accidents which mothers could recall had occurred to their children and, often more serious, accidents which they presumably had learned about from other sources such as the mass media. A conclusion warranted by these results is that the hypothesis formulated by T. Gärling et al. (1984) that parents' perceptions of accident risk are based on both their own experiences and a knowledge acquired from indirect sources receives support. It may also be noted that the fact that accidents not experienced affected the mothers' risk perceptions suggests that they overestimated the risk, perhaps more of accidents with serious outcomes than of less serious accidents.

The present study primarily investigated parental beliefs (Sigel, 1985). T. Gärling and A. Gärling (1988) have argued that such beliefs regulate protective actions when formulated as perceptions of accident risk. In support of this hypothesis, the results showed that both the need for supervision (not leaving the child alone) and for different safety measures were felt to be stronger in rooms which were perceived as more dangerous. The need for protection was similarly felt as stronger by mothers of younger children, who also perceived the accident risk as higher. Whether mothers act in accordance with their felt needs is a question which future studies should address. This is the more important that it may be socially desirable to respond to interview questions the very way the mothers did. To what extent the present results would differ in other subpopulations of subjects is yet another question. For instance, parents with higher education were somewhat overrepresented in the sample, due to the fact

that students and university employees dominate the population in the city where the study was conducted.

Finally, the additional point may be made that the rather strongly felt need for supervision and the frequent implementation of, and positive attitudes towards, safety measures in the home highlight the fact that mothers are tuned to act in advance (Holden, 1983), both by attempting to structure the environment and to control the children's actions. The present study has shown that perceptions of dangers in the home probably are instrumental to such attempts. To what extent parents are unsuccessful because their perceptions are inaccurate, or perhaps because they are too lowly updated as the children grow older, is still another question for future research to answer more carefully than was possible in the present study.

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