DRIVER RISK ASSESSMENT IN FINLAND AND MICHIGAN

Juha Luoma

The University of Michigan
Transportation Research Institute
Ann Arbor, Michigan 48109-2150
U.S.A.

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15. Abstract

This survey investigated driver risk assessment in Finland and Michigan. Specifically, 335 drivers in Lahti, Finland and 272 drivers in Ann Arbor, Michigan answered questions presented in a mailed survey form. The response rate was 45% in Lahti and 29% in Ann Arbor.

The main findings are summarized as follows. Both men and women in the two cities ranked risks rather similarly (except for the strong and weak points of driving skills). The results concerning the mean values of the assessments of each scale showed that drivers in Lahti assessed risks higher than drivers in Ann Arbor. This was the case whether the scale concerned external or internal risks, or strong and weak points of driving skills. On the other hand, drivers in Lahti were less worried about difficulties in traffic than were drivers in Ann Arbor.

In conclusion, the generally high rank correlations between cities suggest that drivers in Lahti and Ann Arbor assess different risks in traffic relatively similarly. Small differences in the level of assessments were interpreted to be caused by cultural factors, such as a general assessment of risks in traffic compared to risks of other activities.

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CONTENTS

INTRODUCTION

The present study is one of two studies performed as part of a research project on cross-national differences in driver behavior in Finland and Michigan. The first study unobtrusively observed in-traffic driver behavior in one city from each region (Luoma, 1994). Results suggested that, overall, driver behavior is rather similar in Finland and Michigan, and most of the differences are minor. However, drivers in Finland (compared to those in Michigan) signalled more frequently before changing lanes or turning, came to a full stop at intersections with a stop sign more frequently, and used safety belts more frequently.

This study focused on driver risk-assessment in Finland and Michigan. The underlying rationale was that driver risk assessment plays *some* role in driving when considering road safety. However, it is noteworthy that there have been a substantial range of views about the effects of risk assessment on driving. Some researchers consider that realistic assessment of risks can be defined as one of the most important parts in decision making and safe driving, while others think that assessment of risk has no effect on decision making during driving tasks, because drivers normally assess the risk level to be zero (see e.g., Keskinen, Hatakka, Katila, Laapotti, Ota, and Fukazawa, 1994).

Risk assessment and related factors, such as risk perception and risk taking, have been investigated in several comparative studies. Nagayama (1989) compared how Canadian, Japanese, Korean, and U.S. drivers assessed potential causes of road accidents. The most substantial differences were found when drivers assessed items concerning pedestrians, road conditions, and bad weather. Specifically, drivers in Japan and Korea, in comparison to drivers in Canada and the U.S, assessed these factors to be more important causes. However, drinking and driving was ranked the most important cause of accidents in each country. In addition, Nagayama (1989) investigated how drivers predict the cause of a possible accident in the future. Japanese drivers emphasized the possibility that an accident will be caused by his/her own driving, while drivers from the other studied countries emphasized other people's driving.

Sivak, Soler, Tränkle, and Spagnhol (1989) compared driver risk perception in Brazil, Spain, the United States, and West Germany. Subjects estimated the risk involved in slide-projected traffic scenes. The results showed that Spanish drivers reported the highest risk, while U.S. drivers reported the lowest risk, and younger drivers tended to report lower risk than middle-aged and older drivers.

Sivak, Soler, and Tränkle (1989a) compared Spanish, U.S., and West German driver risk taking. The task consisted of performing a simulated intersection crossing on a video display. They found that the performance of West German subjects tended to differ from those of U.S. and Spanish subjects. Specifically, West German subjects attempted fewer crossings, had a

higher probability of success, and had greater safety margins. Furthermore, target risk level of performance, measured by probability of successful crossings, was not affected by age and sex. However, probability of attempted crossings was greater for males and younger subjects than for females and older subjects.

In a parallel study, Sivak, Soler, and Tränkle (1989b) compared driver self-assessment in the same countries. The majority of drivers in each country rated themselves positively on all driving-related scales studied. In addition, significant effects of country, age group, and sex of the subjects were present for several of the scales, and some of these effects remained significant even after controlling for driving experience.

Rothengatter (1993) investigated attitudes toward traffic violations and enforcement in Ireland, The Netherlands, Norway, and Spain. He found that Dutch drivers considered driving without a license as being quite serious, while this violation ranked as one of the least serious amongst Spanish drivers. Furthermore, Dutch and Irish drivers were notably more lenient towards speeding violations than Norwegian drivers. Spanish (and, to lesser extent, Irish) drivers considered overtaking where prohibited as more serious than did other drivers. In general, Norwegian drivers tended to view all violations as more serious than other drivers.

The European SARTRE (Social Attitudes to Road Traffic Risk in Europe) project investigated attitudes to road traffic risks in fifteen European countries (Cauzard, 1994). The following main differences were found. First, Swedish and Danish drivers preferred the lowest speed limits, while West German, Austrian, Swiss, and Italian drivers opted for the highest limits. Second, Hungarian, Czech/Slovak, British, and Irish drivers would like road conditions to be improved, while West German, Austrian, and Swiss did not emphasize this improvement. Third, Swedish and Danish drivers, in comparison to their French and Italian counterparts, preferred compulsory daytime running lights, speed limits on limited-access highways, wearing of seat belts, and the legal alcohol concentration limit for driving. Finally, British and Irish drivers were stricter in matters of alcohol legislation and drunk driving, but less concerned with speed limits in towns and residential areas, while Czech/Slovak and Hungarian drivers had the opposite preferences.

Keskinen, Savontaus, Hatakka, Katila, Laapotti, Ota, and Fukazawa (1994) conducted a survey investigating risk assessment among Japanese and Finnish young novice drivers. Assessment of risks and skills differed according to drivers' sex and country. In each country, male drivers were less afraid and they assessed internal risks higher than female drivers. However, males and females differed more in Japan than in Finland. In both countries, males and females assessed the risks and the components of their driving skill to be in the same order according to the severity of risks and quality of driving skill.

The present study was designed to investigate driver risk assessment in Finland and Michigan, while the first study focused on in-traffic behavior. The rationale for performing these two studies in parallel was that while the results of the observational study revealed differences and similarities in actual behavior, the present study would provide information on drivers' conceptions on road traffic. The parallel performance of different approaches was seen as potentially fruitful for developing methodology for cross-national comparisons of driver behavior. Usually only one approach has been performed (e.g., Groeger and Brown, 1989). Some items of the present study and the behavioral study are directly comparable. However, in most cases the results of the present study provide more general information.

METHOD

Subjects

We selected one city from each region: Lahti from Finland and Ann Arbor from Michigan. Basic demographic data on these two cities are given in Table 1. One thousand residents of each city were selected for the survey. Each sample included a random sample of all residents of the city who were 18 or older and who did not share addresses. In addition, the numbers of men and women were constrained to be equal. The sample size was approximately 1% of the population of each city. The Finnish sample was provided by Statistics Finland, while the Michigan sample was provided by R.L. Polk.

Table 1
Basic demographic data on Lahti and Ann Arbor.

	Lahti	Ann Arbor ∞
Area ($km^{2)}$	135.0*	67.1
Population	93,414*	109,592
Percentage of men	46.8†	49.3
Age distribution (%):		
≤18	21.6†	20.2
19-64	64.0†	72.5
≥65	14.4†	7.3
Median age (years)	38.1†	27.3
Per capita income (US$)	14,900Δ	17,800

* for 1992 (Statistics Finland, 1992)
† for 1991 (City of Lahti, 1992)
Δ for 1990 (City of Lahti, 1991)
∞ all information for 1990 (U.S. Bureau of the Census, 1992)

Survey form

A survey form was the same as used in the studies of Keskinen, Hatakka, Katila, Laapotti, Ota, and Fukazawa (1994) and Keskinen, Savontaus, Hatakka, Katila, Laapotti, Ota, and Fukazawa (1994). It has been developed by researchers in the Department of Psychology at the University of Turku, Finland. The form had five rating scales (total 83 items):

1. Things that drivers are worried about or cause difficulties (16 items).
2. How much some external factors contribute to risk (13 items).
3. Risks related to drivers' character, habits, and skills (11 items).

4. Strong and weak points of driving skills (19 items).
5. Frequencies of different kinds of driving-related events (24 items).

The original form was in Finnish. An initial translation of the English version for the Michigan survey was provided by the original authors. The translation was checked by the staff of the Human Factors Division of the University of Michigan Transportation Research Institute. The English version of the survey form and cover letter are reproduced in the appendix.

Mailing

The form was mailed with a cover letter that requested voluntary cooperation with the survey. A stamped envelope addressed to VTT or UMTRI was included for the participant to use in returning the form. The Finnish forms were mailed in March 1993, while the U.S. forms were mailed in October 1993. The survey was anonymous, so it was not possible to determine which individuals returned the forms. For that reason, no reminder notices were sent.

RESULTS

Response rates

Of the 1,000 forms mailed in each city, 11 in Lahti and 3 in Ann Arbor were returned by the post office undelivered. Of the remaining forms, which can be assumed to have been delivered, 45% in Lahti and 29% in Ann Arbor were completed (see Table 2).

Some participants did not drive a car during the preceding year. They were requested to return the form without completing the survey. Because of the relatively low response rates, the results will be presented as trends, without performing detailed analyses.

Table 2
Returned forms and response rates in Lahti and Ann Arbor.

Response category	Lahti				Ann Arbor			
	Male	Female	Un-known	Total	Male	Female	Un-known	Total
Responded and had driven	216	112	7	335	132	139	1	272
Responded but did not drive	19	63	28	110	1	12	5	18
Address unknown	9	2	0	11	2	1	0	3
Total	243	177	32	452	135	148	7	293
Response rate (%)				45				29

Characteristics of respondents

The age and amount of driving of respondents are summarized in Table 3 by city and sex. These variables were submitted to an analysis of variance using two variables: city and sex. The effect of both variables on age and amount of driving was statistically significant ($p < 0.05$), as was the interaction of city and sex in the case of age.

Table 3
Age and amount of driving of respondents by city and sex.

Variable	Lahti				Ann Arbor			
	Male		Female		Male		Female	
	Mean	Std dev	Mean	Std dev	Mean	Std dev	Mean	Std dev
Age (years)	45.1	15.5	38.9	12.2	45.1	13.9	45.1	13.9
Amount of driving during the preceding year (km)	22,418	21,541	10,299	9,453	27,427	16,158	16,462	12,430

Risk assessments

Results concerning risk assessments were summarized by using the following two main types of analyses: (1) rank correlations of the assessments (for each scale), and (2) mean levels of risk assessments (for Scales 1 to 4). In addition, Figures 1-5 show assessments concerning individual items for each scale by city and sex. Results are shown separately for male and female drivers because of many statistically significant sex effects and because of a consistent manner of presentation with previous results collected by the same method, e.g., Keskinen, Savontaus, Hatakka, Katila, Laapotti, Ota, and Fukazawa (1994). Finally, results concerning six specific items in the fifth scale (frequencies of different driving-related events) were compared to the results from a related observational study (Luoma, 1994).

Rank correlation of the assessments. Rank correlations for items of each scale were computed between cities (Table 4). This analysis shows the degree of similarity for the rank orders of individual items of a given scale. The analysis was done separately for males and females. In addition, rank correlations between sexes by city are provided in Table 4.

Table 4
Rank correlations of assessments by sex and city.

Scale	Between Cities		Between Sexes	
	Males	Females	Lahti	Ann Arbor
1. Things that drivers are worried about	0.89	0.82	0.79	0.94
2 How much some external factors contribute to risk	0.71	0.93	0.68	0.94
3. Risks related to drivers' character, habits, and skills	0.85	0.87	0.79	0.67
4. Strong and weak points of driving skills	0.53	0.72	0.79	0.53
5. Frequencies of different kinds of driving-related events	0.89	0.93	0.88	0.95

Mean level of risk assessments. Mean values of Scales 1-4 were calculated by adding rating values of items in a given scale and dividing the sum of ratings by the number of the items in that scale. This approach assumes that the distances among different options are equal, i.e., a distance between 1 and 2 is assessed to be equal to a distance between 2 and 3, etc. Mean rating values of the Scales 1-4 were submitted to an analysis of variance using the following four variables: city, sex, age, and amount of driving during the preceding year. The main purpose of this analysis was to examine whether the mean assessments in a given scale are in the different level.

From the third and fourth scale, two different subscales were derived for an analysis of variance, because each of these scales included two types of items (see Keskinen, Hatakka, Katila, Laapotti, Ota, and Fukazawa, 1994). Subscale 3a included those items from Scale 3 that were related to experienced lack of skills or overly cautious driving (Insufficient knowledge of traffic regulations, Overly cautious driving, and Insufficient vehicle handling skills). Subscale 3b included the remaining items of Scale 3. These items were related to one's own carelessness or ignorance of rules. Correspondingly, Scale 4 was divided into two parts. Subscale 4a included items related to driver's cautiousness (Consideration of pedestrians and bicyclists, Driving according to the traffic regulations, Driving carefully, and Consideration of other road users). Subscale 4b included the remaining items of Scale 4. This subscale was related to driver's actual driving skills.

For the purpose of analyses of variance, age was classified into three categories (< 25 years, 25-60 years, and > 60 years), and amount of driving during the preceding year was also classified into three categories (≤ 10,000 km, 10,001-25,000 km, and >25,000 km). Due to empty cells, three-way and higher-order interactions were excluded from the analyses.

Table 5 shows the main effects of city, sex, age, and amount of driving on means of the scales, and a measure of internal consistency (*Cronbach's* α) of each scale/subscale.

In addition to the main effects presented in Table 5, the interaction of city and age on Subscale 3a was significant ($p < 0.05$), with the higher ratings for older drivers in Ann Arbor (1.06, 1.36, and 1.62) but not in Lahti (1.56, 1.51, and 1.56). Also, the interaction of age and amount of driving was significant on Subscale 3b, with no clear pattern (the highest ratings for younger drivers with a moderate amount of driving (2.09), followed by older drivers with a moderate amount of driving (1.92), middle-age drivers with the highest amount of driving (1.83), all drivers with lowest amount of driving (1.73-1.75), and others (1.50-1.70)).

Table 5
Main effects of city, sex, age, and amount of driving on mean values of the scales (in Scale 1 higher value indicates less worried drivers, while in Scales 2-4 higher values indicate higher assessed risk; bold entries indicate that the particular difference is statistically significant, $p < 0.05$.)

Scale (α)	City		Sex		Age			Amount of Driving		
	L	A	M	F	Y	M	O	L	M	H
1. Things that drivers are worried about (0.86)	**3.44**	**3.32**	**3.46**	**3.29**	3.48	3.39	3.34	**3.30**	**3.43**	**3.44**
2. How much some external factors contribute to risk (0.85)	**2.61**	**2.41**	**2.50**	**2.55**	2.43	2.53	2.52	2.57	2.48	2.52
3a. Risks related to own lack of skills (0.65)	**1.52**	**1.39**	1.44	1.49	1.46	1.44	1.59	**1.59**	**1.39**	**1.39**
3b. Risks related to own carelessness (0.86)	**1.84**	**1.67**	**1.84**	**1.65**	1.80	1.75	1.80	1.75	1.75	1.80
4a. Strong and weak points related to cautiousness (0.73)	**2.31**	**2.01**	**2.27**	**2.04**	**2.38**	**2.18**	**2.00**	2.15	2.18	2.18
4b. Strong and weak points related to skills (0.92)	**2.47**	**2.23**	**2.23**	**2.54**	2.44	2.36	2.33	**2.61**	**2.31**	**2.09**

Note: City: L = Lahti, A = Ann Arbor.
Sex: M = males, F = females.
Age: Y = younger, M = middle-aged, O = older.
Amount of driving: L = low, M = moderate, H = high.

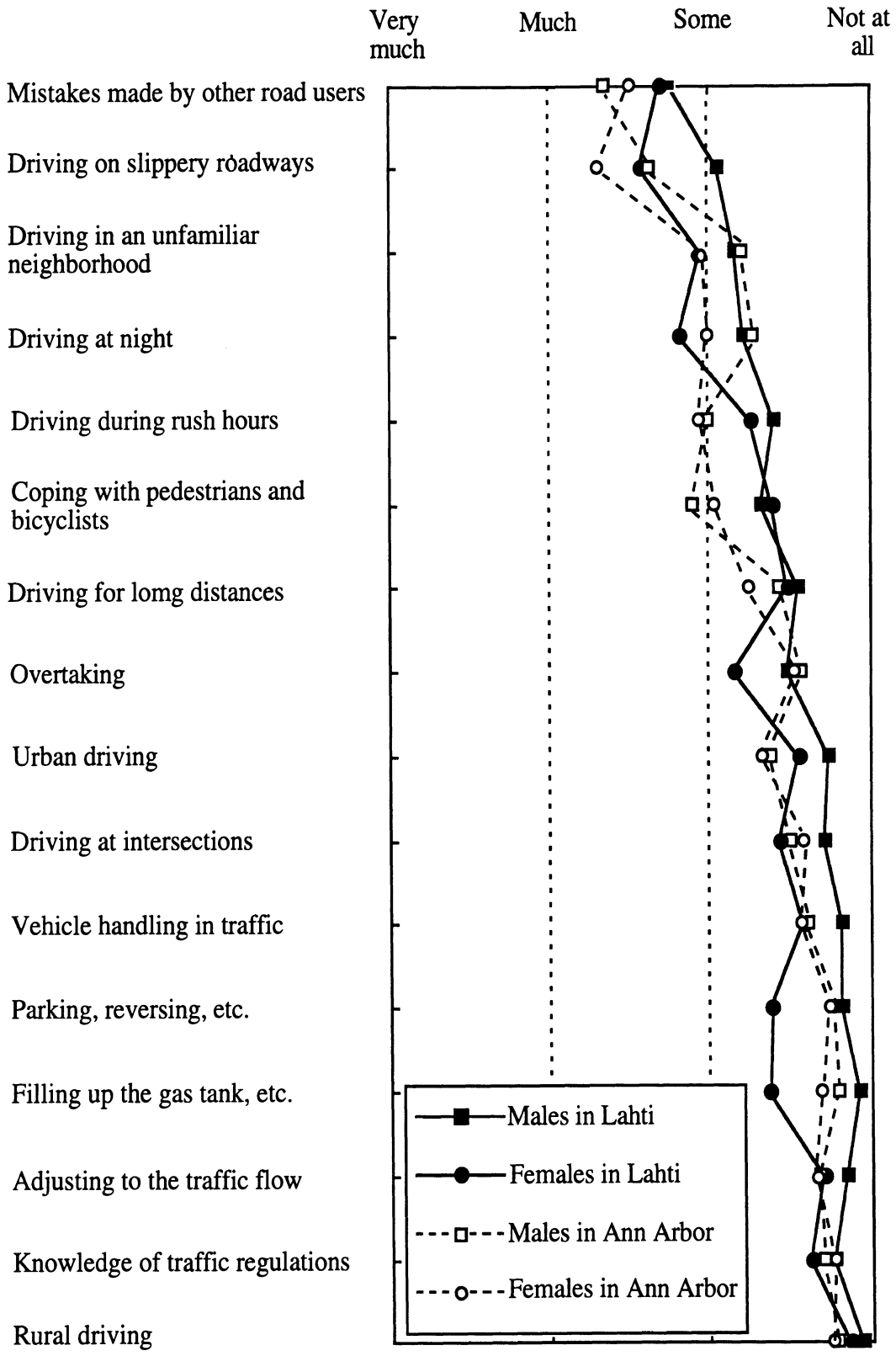

Figure 1. Things that the drivers are worried about or cause difficulties.

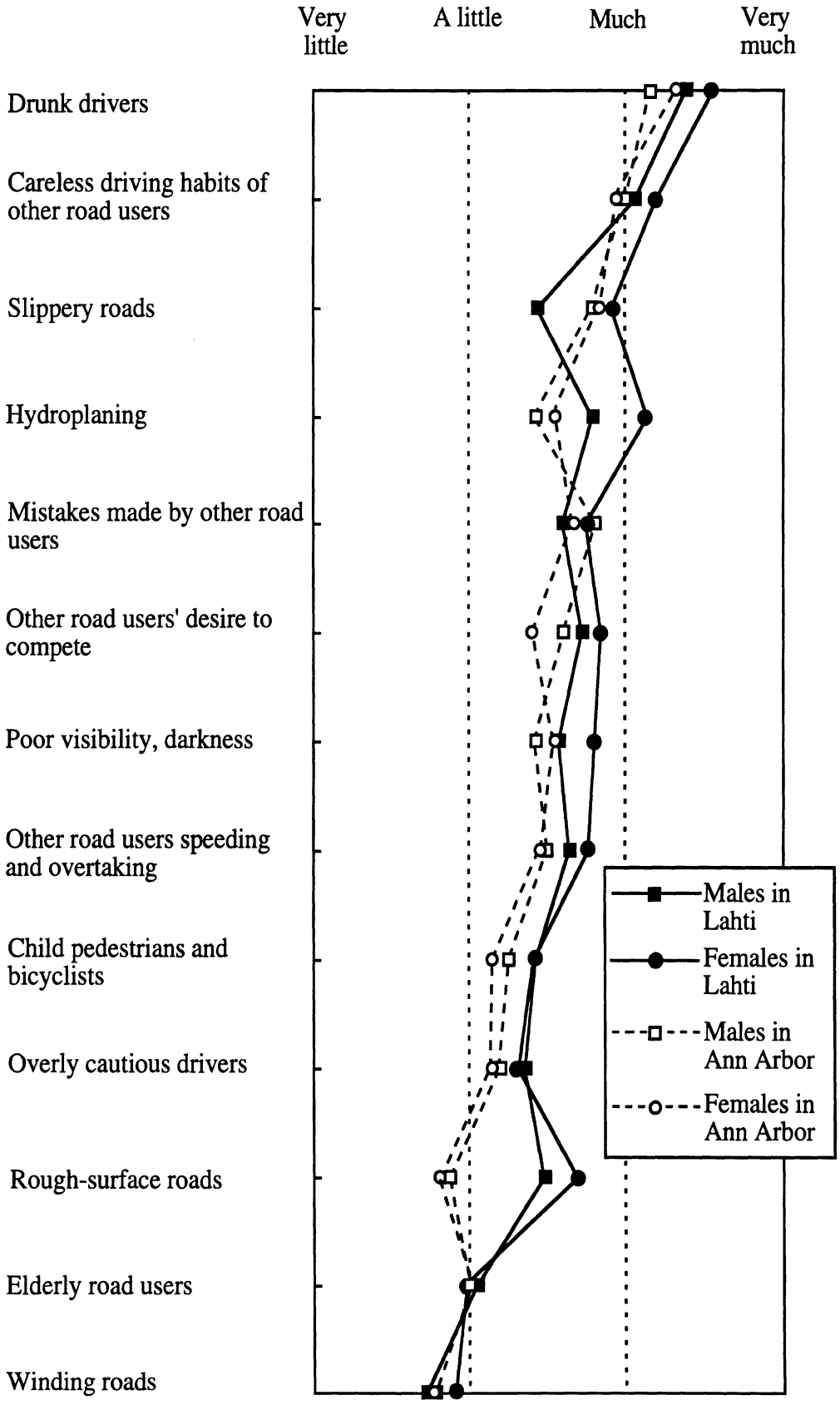

Figure 2. How much some external factors cause risk.

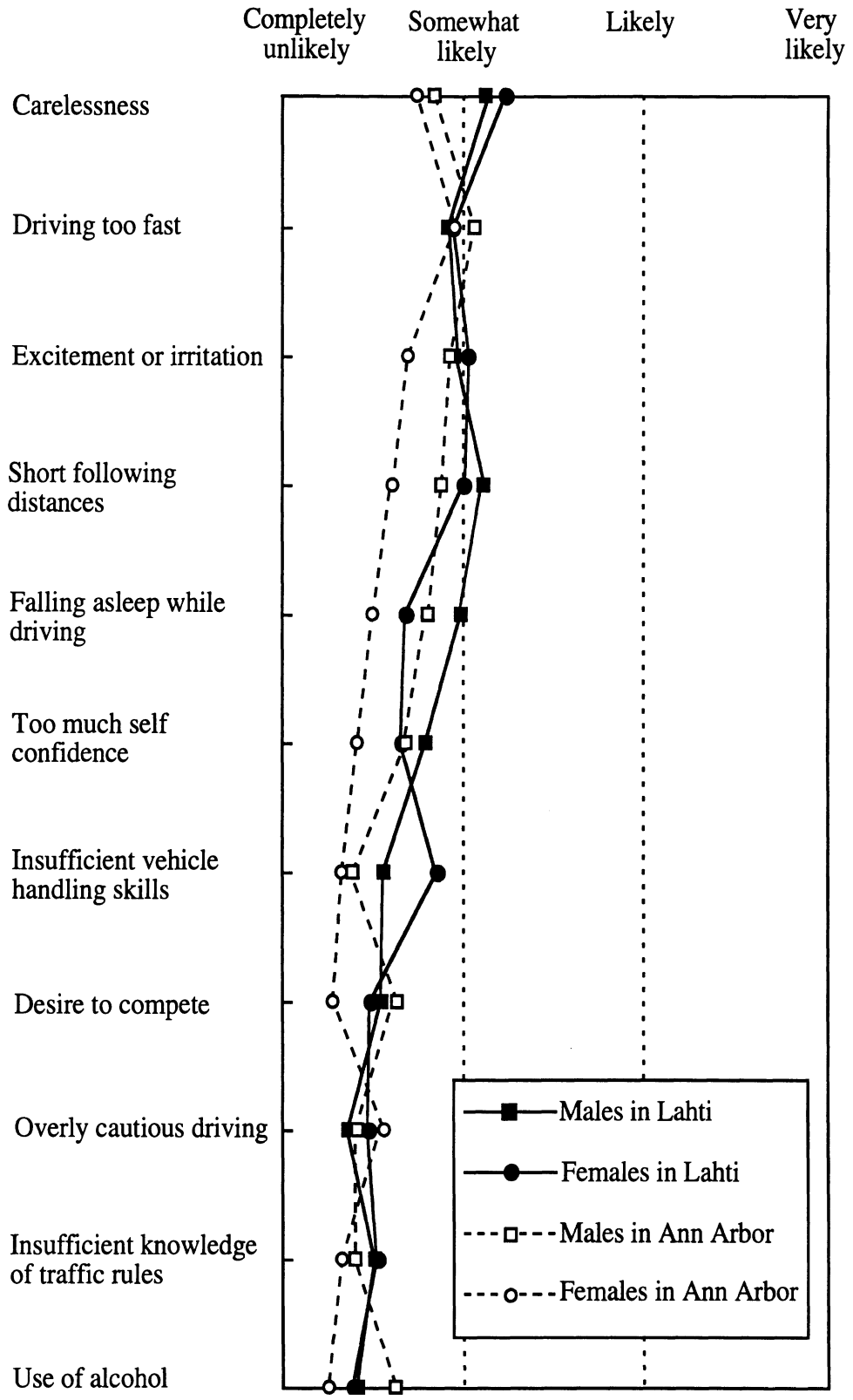

Figure 3. Risks related to the driver's character, habits, and skills (an asterix * indicates that the item is included in Subscale 3a.)

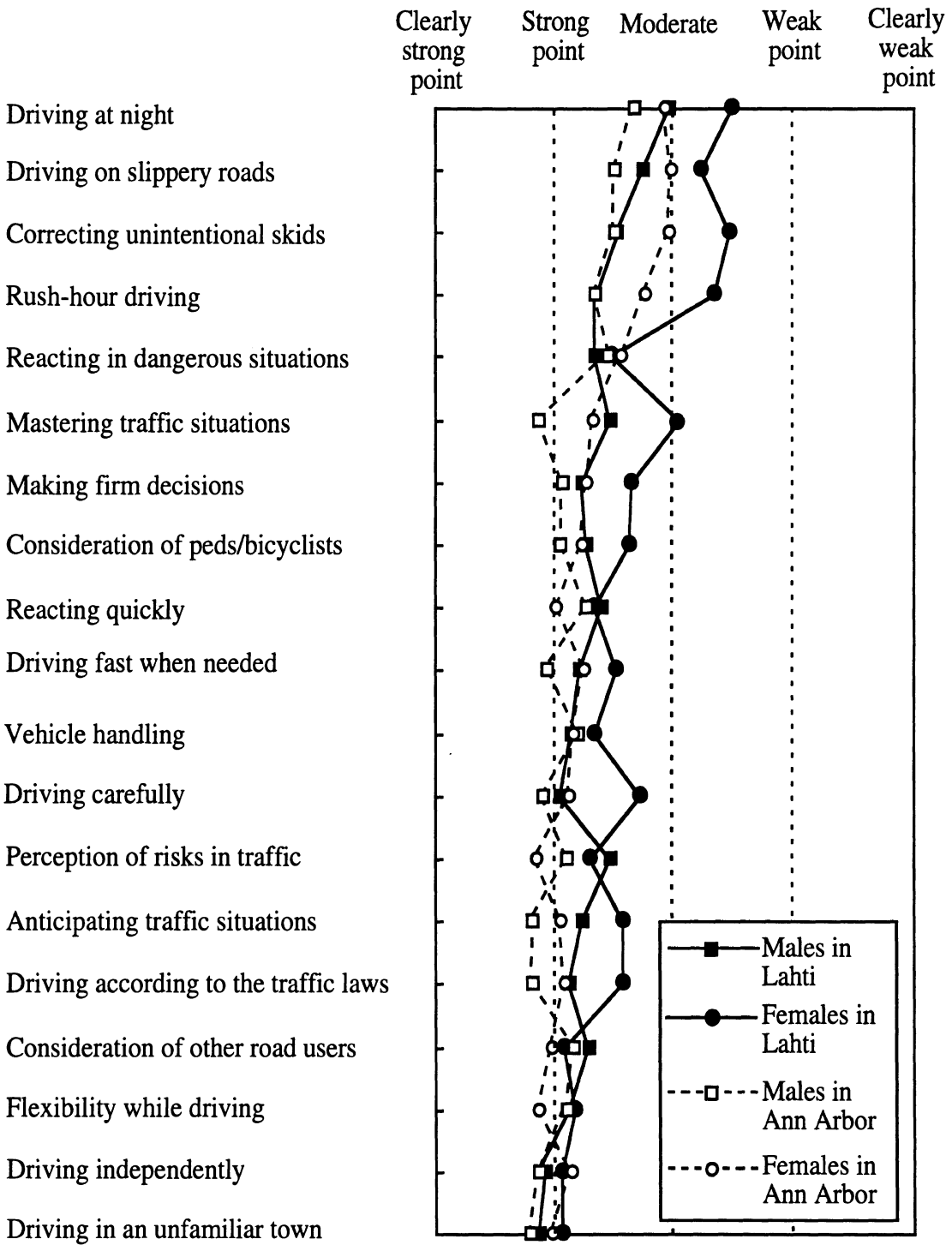

Figure 4. Strong and weak points of driving skills (an asterix * indicates that the item is included in Subscale 4a.)

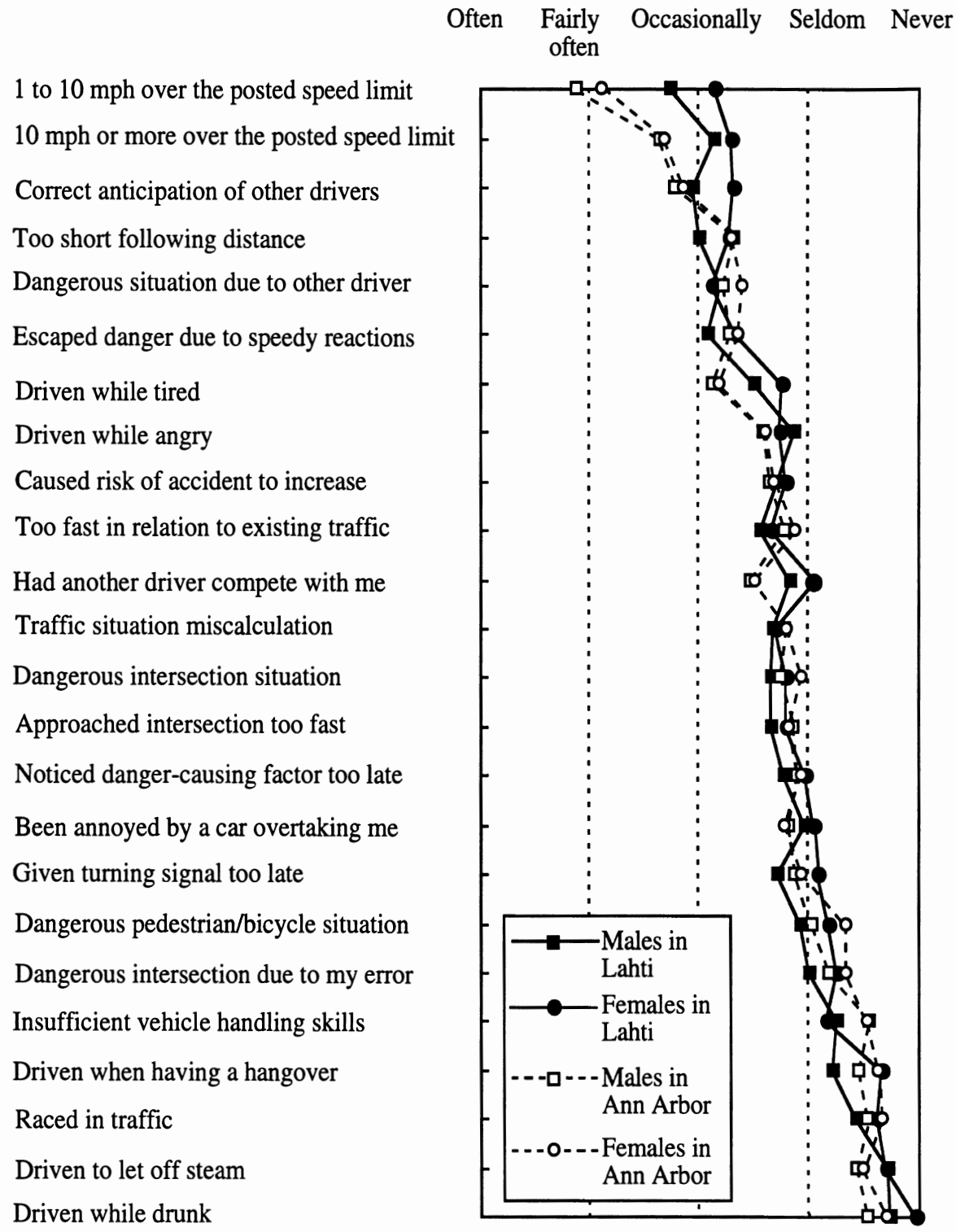

Figure 5. Frequencies of different kinds of events related to driving.

Comparison of results concerning six survey items and in-traffic observations. The assessments of interest were submitted to an analysis of variance using two factors: city and sex. The results of the analyses and related results concerning behavioral observations are summarized in Table 6.

Table 6
Comparison of selected survey results and corresponding observed behaviors in Lahti and Ann Arbor (in the same order as in Figure 5).

Item	Survey on frequencies of different events	Observation of driver behavior
I have driven 1 to 10 miles per hour above the posted speed limit	*City*, $F(1,556) = 113.1$, $p < 0.001$, with drivers in Ann Arbor indicating that they exceed speed limits more often than those in Lahti (1.98 vs. 2.89). *Sex*, $F(1,556) = 11.6$, $p < 0.002$, with male drivers indicating that they exceed speed limits more often than female drivers (2.41 vs. 2.55).	The proportion of drivers exceeding the speed limit on suburban streets was smaller in Ann Arbor than in Lahti. Driver's sex was not observed.
I have driven over 10 miles per hour above the posted speed limit	*City*, $F(1,565) = 37.4$, $p < 0.001$, with drivers in Ann Arbor indicating that they exceed speed limits more often (2.66) than drivers in Lahti (3.20). Effect of sex was not significant.	No significant difference between the cities in the proportions of drivers exceeding the speed limit by more than 15 km/h on suburban streets. Driver's sex was not observed.
I have driven with too short of a following distance	*City*, $F(1,565) = 52.7$, $p < 0.03$, with drivers in Lahti indicating that they drive more often with too short of a following distance (3.09) than drivers in Ann Arbor (3.30). Effect of sex was not significant.	No systematic differences in the proportion of short headways on suburban streets. Driver's sex was not observed.
I have approached an intersection too fast	Effects of city and sex, and interaction between these variables, were not significant.	While approaching an intersection from a secondary road, speed change was more substantial in Lahti than in Ann Arbor at the distances 90 m and 30 m from the intersection (but not at 60 m).
I have given a turning signal too late	Effect of city was not significant. *Sex*, $F(1,567) = 11.5$, $p < 0.002$, with male drivers (3.78) indicating more delayed signals than female drivers (4.00)	Drivers in Lahti signalled more frequently than those in Ann Arbor before lane change and before turning. Effect of sex was not significant.
I have gotten into a dangerous situation with a pedestrian or a bicyclist	Effect of city was not significant. *Sex*, $F(1,565) = 20.3$, $p < 0.001$, with male drivers (3.96) indicating more dangerous situations than female drivers (4.26)	No significant difference in the proportions of the different interactions of left-turning drivers and pedestrians between cities. Driver's sex had no significant effect on driver-pedestrian interactions in either city.

DISCUSSION

This survey investigated driver risk assessment in Finland and Michigan. Specifically, 335 drivers in Lahti, Finland and 272 drivers in Ann Arbor, Michigan answered questions presented in a mailed survey form. Although the internal consistency of the scales was reasonable high, the reliability of the survey was decreased by the relatively low response rate (45% in Lahti and 29% in Ann Arbor). Consequently, the obtained differences should be viewed only as possible trends.

The main findings concerning the comparison of the two cities are summarized as follows:

(1) Both men and women in the two cities ranked different risks rather similarly, except for the strong and weak points of driving skills.

(2) The results concerning Scales 2 through 4 showed that drivers in Lahti assessed risks higher than drivers in Ann Arbor. This was the case whether the scale concerned external risks (Scale 2), risks related to own lack of skills (Scale 3a), risks related to own carelessness (Scale 3b), strong and weak points related to cautiousness (Scale 4a), or strong and weak points related to skills (4b). On the other hand, drivers in Lahti were less worried about difficulties in traffic than drivers in Ann Arbor (Scale 1).

(3) Male drivers, in comparison to female drivers, were less worried about difficulties in traffic, assessed external risks and risks related to their own carelessness higher, and assessed their cautiousness related skills weaker, while assessing actual driving skills stronger.

The generally high rank correlations between cities suggest that drivers in Lahti and Ann Arbor assess different risks in traffic rather similarly. This is in agreement with the main finding of the behavioral study that driver behavior is rather similar in both cities, and that most of the differences are minor (Luoma, 1994). In addition, Luoma and Sivak (1992) found that the main patterns of road accidents in Finland and the U.S. are relatively similar. However, there were differences in the level of assessments that may be caused by cultural factors, such as a general assessment of risks in traffic compared to risks in other activities. Specifically, one could assume that the road transportation system in Michigan, which is based almost exclusively on the use of private cars, results in relatively lower risk assessments compared to the Finnish transportation system, with more mixed use of transportation modes (i.e., private cars, public transportation, bicycles, etc.). On the other hand, it is noteworthy that the magnitude of these differences was somewhat smaller than between Finnish and Japanese young drivers that was investigated by the same survey form (Keskinen, Savontaus, Hatakka, Katila, Laapotti, Ota, and Fukazawa, 1994). Furthermore, the differences found in the survey and in the observational study show similar trends: (1) assessments of both external and internal risks were somewhat higher, and

assessments of driving skills were weaker among drivers in Lahti compared to drivers in Ann Arbor, and (2) drivers in Lahti tended to behave somewhat more cautiously than did drivers in Ann Arbor (Luoma, 1994). However, the results indicating that drivers in Lahti were less worried than drivers in Ann Arbor, while interesting, is difficult to interpret.

In general, drivers in Lahti and Ann Arbor similarly assessed the frequencies of different kinds of events in the past. However, the comparison of six survey results and corresponding observed behaviors (Table 3) showed that there were many differences between the two data sets. The survey items concerning exceeding speed limits and driving with too short following distances showed differences between the two cities, while there were no differences in observational results. In contrast, the survey items concerning approaching an intersection and use of turn signal did not reveal any differences between the cities, while observations did show differences. The only similarity between the survey results and observational results concerned interactions with pedestrians (and bicyclists) with both sets of data showing no differences between the cities.

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APPENDIX

The cover letter and survey form sent to participants in the U.S. survey.

The University of Michigan
Transportation Research Institute
2901 Baxter Road, Ann Arbor, Michigan 48109-2150

October 1, 1993

Dear Ann Arbor resident:

Please help us with a few minutes of your time! At the University of Michigan's Transportation Research Institute we are conducting a survey of how Michigan drivers understand risk in traffic. The survey consists of the form that is enclosed with this letter. We would greatly appreciate it if you could take a few minutes to fill out the form and return it to us in the enclosed envelope which is already stamped and addressed to me at the Transportation Research Institute.

The Institute is located on the University's North Campus. We have about 140 faculty and staff members, and we do research in many areas relevant to the safety and efficiency of transportation. This study is being conducted by the Institute's Human Factors Division and the Technical Research Centre of Finland. The survey is a part of a research project to determine cross-cultural differences of driver behavior in Michigan and Finland.

Let me encourage you again to complete the survey form and send it to us. The form is very simple. For most questions you are requested just to circle an appropriate alternative. However, the results will be of great interest to us, and we hope they will ultimately contribute to a better understanding of the importance of cross-cultural differences of driver behavior.

There is no need to put your name or address on the form; the survey is completely anonymous. We originally randomly picked 1000 specific names (including yours) from a list of Ann Arbor residents, and we would like the final pool of respondents to be as representative of that group as possible.

If for any reason you choose not to return the survey form, please simply throw it away rather than ask a friend or family member to complete it. Please feel free to enclose a note with your survey form or to call me at the Institute if you have any questions or comments about the survey. Thank you in advance for your help!

Sincerely,

Juha Luoma, Ph.D.
Human Factors Division
936-0410

The University of Michigan
Transportation Research Institute

Please record your:

Sex: 1 male 2 female

Year of birth _____

Estimated mileage you drove during the last year _____miles

If you did not drive a car during the last year, it is not necessary to answer the remaining questions. However, please return the survey form.

How much are you worried about the following or how much difficulty do they cause you in traffic?

		very much	much	some	not at all
1.	Driving at night	1	2	3	4
2.	Driving during rush hours	1	2	3	4
3.	Driving on slippery roadways	1	2	3	4
4.	Driving for long distances	1	2	3	4
5.	Driving in an unfamiliar neighborhood	1	2	3	4
6.	Vehicle handling in traffic	1	2	3	4
7.	Parking, reversing etc.	1	2	3	4
8.	Overtaking	1	2	3	4
9.	Mistakes made by other road users	1	2	3	4
10.	Coping with pedestrians and bicyclists	1	2	3	4
11.	Rural driving	1	2	3	4
12.	Urban driving	1	2	3	4
13.	Filling up the gas tank, adding windshield washer fluid, checking tire pressure etc.	1	2	3	4
14.	Adjusting to the traffic flow	1	2	3	4
15.	Knowledge of traffic regulations	1	2	3	4
16.	Driving at intersections	1	2	3	4

***** One page finished, three more to go! *****

To what extent do the following cause you accident risk in traffic?

	very little	a little	much	very much
17. Rough-surface roads	1	2	3	4
18. Elderly road users	1	2	3	4
19. Slippery roads	1	2	3	4
20. Child pedestrians and bicyclists	1	2	3	4
21. Other road users speeding and overtaking	1	2	3	4
22. Winding roads	1	2	3	4
23. Careless driving habits of other road users	1	2	3	4
24. Other road users' desire to compete	1	2	3	4
25. Poor visibility, darkness	1	2	3	4
26. Drunk drivers	1	2	3	4
27. Overly cautious drivers	1	2	3	4
28. Mistakes made by other road users	1	2	3	4
29. Hydroplaning	1	2	3	4

Based on your character, habits, and skills, how likely it is that the following cause you accident risk in traffic?

	completely unlikely	somewhat likely	likely	very likely
30. Insufficient knowledge of traffic regulations	1	2	3	4
31. Driving too fast	1	2	3	4
32. Falling asleep while driving	1	2	3	4
33. Overly cautious driving	1	2	3	4
34. Desire to compete	1	2	3	4
35. Short following distances	1	2	3	4
36. Carelessness	1	2	3	4
37. Excitement or irritation	1	2	3	4
38. Too much self confidence	1	2	3	4
39. Use of alcohol	1	2	3	4
40. Insufficient vehicle handling skills	1	2	3	4

***** Two pages finished, two more to go! *****

Drivers differ in many ways, especially when driving skills are divided into components and the components are evaluated separately. Everyone has his/her own strong and weak points. Assess what are the strong and weak points of <u>your own</u> driving skills.

		clearly strong point	strong point		weak point	clearly weak point
41.	Flexibility while driving	1	2	3	4	5
42.	Reacting in dangerous situations	1	2	3	4	5
43.	Perception of risks in traffic	1	2	3	4	5
44.	Driving independently	1	2	3	4	5
45.	Driving in an unfamiliar town	1	2	3	4	5
46.	Consideration of pedestrians and bicyclists	1	2	3	4	5
47.	Driving on slippery roads	1	2	3	4	5
48.	Driving according to the traffic regulations	1	2	3	4	5
49.	Correcting unintentional skids	1	2	3	4	5
50.	Anticipating traffic situations	1	2	3	4	5
51.	Driving carefully	1	2	3	4	5
52.	Mastering traffic situations	1	2	3	4	5
53.	Rush-hour driving	1	2	3	4	5
54.	Reacting quickly	1	2	3	4	5
55.	Making firm decisions	1	2	3	4	5
56.	Consideration of other road users	1	2	3	4	5
57.	Driving fast when needed	1	2	3	4	5
58.	Driving at night	1	2	3	4	5
59.	Vehicle handling	1	2	3	4	5

***** Three pages finished, only one more to go! *****

Estimate how often the following have happened to you in the past.

	often	fairly often	occa-sionally	seldom	never
60. I have driven with too short of a following distance	1	2	3	4	5
61. I have gotten into a dangerous situation as a result of another driver's mistake	1	2	3	4	5
62. I have driven while drunk	1	2	3	4	5
63. I have gotten into a dangerous situation at an intersection that was not my fault	1	2	3	4	5
64. I have driven over 10 miles per hour above the posted speed limit	1	2	3	4	5
65. I have noticed a danger-causing factor too late	1	2	3	4	5
66. Another driver has tried to compete with me in traffic	1	2	3	4	5
67. I have been annoyed when another driver has overtaken me	1	2	3	4	5
68. I have made a miscalculation in a traffic situation	1	2	3	4	5
69. I have driven 1 to 10 miles per hour above the posted speed limit	1	2	3	4	5
70. I have driven when having a hangover	1	2	3	4	5
71. I have raced in traffic	1	2	3	4	5
72. I have driven while tired	1	2	3	4	5
73. I have gotten into a dangerous situation with a pedestrian or a bicyclist	1	2	3	4	5
74. I have driven while angry	1	2	3	4	5
75. I have driven too fast in relation to the existing traffic	1	2	3	4	5
76. I have gotten into a dangerous situation at an intersection as a result of my own mistake	1	2	3	4	5
77. I have avoided an accident by correct anticipation	1	2	3	4	5
78. I have gone for a drive to let off steam	1	2	3	4	5
79. I have escaped from a dangerous situation thanks to my speedy reactions	1	2	3	4	5
80. I have approached an intersection too fast	1	2	3	4	5
81. I have given a turning signal too late	1	2	3	4	5
82. In a hurry I have had to drive in such a way that my risk of having an accident has increased	1	2	3	4	5
83. I have gotten into a dangerous situation because of my insufficient vehicle handling skills	1	2	3	4	5

***** All pages finished! Thank you for your help! *****